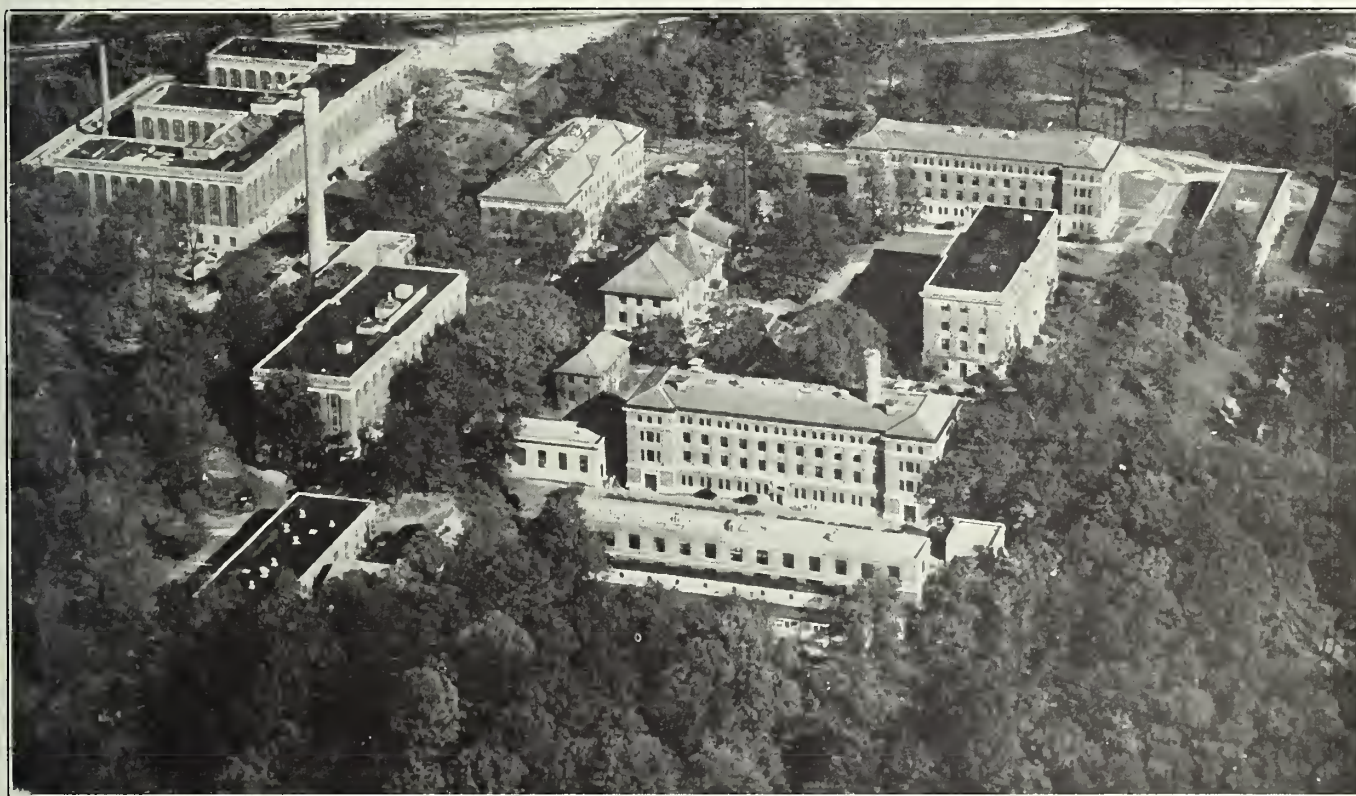


# COMMERCIAL STANDARDS MONTHLY



*A Review of Progress in  
Commercial Standardization and Simplification*



AIRPLANE VIEW OF NATIONAL BUREAU OF STANDARDS

ISSUED BY THE NATIONAL BUREAU OF STANDARDS OF THE  
UNITED STATES DEPARTMENT OF COMMERCE, WASHINGTON, D.C., U.S.A.

Vol. 6, No. 6



DECEMBER, 1929



# U. S. DEPARTMENT OF COMMERCE

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### DIVISIONS OF THE COMMERCIAL STANDARDIZATION GROUP

#### DIVISION OF SIMPLIFIED PRACTICE, EDWIN W. ELY.

The division of simplified practice was formed in November, 1921, to provide a clearing house or centralizing agency through which the manufacturer, distributor, and consumer groups could meet to discuss their common problems and decide upon eliminations which would prove of mutual benefit to all concerned. The activities of the division are purely cooperative in character. It orders nothing; it dictates nothing; the initiative must come from business itself. It has no regulatory nor police powers to enforce adherence to the simplified-practice recommendations that industry develops under the auspices of the United States Department of Commerce. Its chief function is to serve as a neutral meeting ground for the purpose of bringing together producers, distributors, and consumers, whose aims are sometimes divergent and possibly antagonistic, and who would be unwilling to cooperate, except through some unbiased central agency. Following the approval of the tentative simplified-practice recommendation by a general conference of all interested elements thereof, the project is then presented to the entire industry by letter referendum for its approval and written acceptance, the publication and indorsement of the recommendation on the part of the Department of Commerce being dependent upon acceptance of the program by at least 80 per cent, by volume, of the manufacturers, distributors, and users concerned.

#### AMERICAN MARINE STANDARDS COM'TEE, A. V. BOUILLON.

The American Marine Standards Committee was organized to promote simplification of practice and elimination of waste in the marine and allied industries. It is composed of individuals, corporations, societies, Government departments, public bodies, or other organizations or groups engaged in building or operating ships, port facilities, and related activities. It works in close cooperation with official agencies, but its activities are controlled by an executive board elected annually by and from the membership. For further information, write direct to the secretary, A. V. Bouillon, Room 713, Department of Commerce, Washington, D. C.

#### DIVISION OF TRADE STANDARDS, I. J. FAIRCHILD.

The commercial standards unit, now known as division of trade standards, was created on October 1, 1927, for the purpose of aiding those industrial and commercial groups desiring to establish standards of grades, quality, or measurements for their products or their purchases on a purely voluntary basis.

The division functions only at the direct request of the industry concerned. Its procedure is similar to that of the division of simplified practice, except that at least 65 per cent of the industry, by volume of annual production, must accept the commercial standard in writing before it is published by the Department of Commerce. A certification plan is applied

#### DIVISION OF TRADE STANDARDS—Continued.

on request as a means of increasing the effectiveness of such standards. Provision is made for regular revision of the standard through the appointment of a standing committee to consider periodically any necessity for revision of the standard, in order that it may be kept constantly compatible with progress in the industry.

#### DIVISION OF SPECIFICATIONS, A. S. McALLISTER.

The duties of the division of specifications are to promote and facilitate the use and unification of specifications. In doing so it carries on activities involving cooperation with technical societies; trade associations; Federal, State, and municipal Government specifications making and using agencies; producers, distributors, and consumers; and testing and research laboratories. The cooperation with technical societies and trade associations includes ascertaining the standardization and specification promoting activities of these organizations, and bringing to their attention the work being done by the commercial standardization group. The cooperation with producers involves the compilation of lists of manufacturers who have expressed their willingness to certify to purchasers, upon request, that material supplied by them on contracts based on certain Federal specifications or commercial standards comply with the requirements thereof. The division prepares the directories of governmental and nongovernmental testing laboratories; the Directory of Specifications; and is working on an encyclopedia of specifications, the first volume of which, Standards and Specifications in the Wood-Using Industries, has been issued. It also aids in preparing the Standards Year-book.

#### BUILDING AND HOUSING DIVISION, J. S. TAYLOR.

The division of building and housing cooperates with business, technical, and professional groups in practically all its undertakings on building and housing. Its work to modernize building codes and to encourage improved standards for the quality of building construction promotes the practical application of the latest development in design and use of building materials. This division was also formed in 1921.

In furthering home ownership, an effort is made to develop an enlarged, steadier, more intelligent, and more discriminating demand for soundly built dwellings, the largest single class of buildings which the construction industries provide. The division also cooperates with many business and professional groups in efforts to distribute building activity more evenly throughout the year, and to secure less fluctuation from year to year. The work on city planning and zoning has in mind the broad objective of buildings made more useful because well located with respect to other buildings, a well-coordinated street system, and appropriate public works. Good city planning and zoning likewise encourages stability in land values and property uses, and thereby contributes to the demand for durable structures.

Except where otherwise indicated, for further information address

**BUREAU OF STANDARDS**

WASHINGTON, D. C.

# COMMERCIAL STANDARDS MONTHLY

## *A Review of Progress in Commercial Standardization and Simplification*

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On the subject of pleas and things of that sort, permit us to enter one on behalf of your favorite news dealer. Please don't call him—well, you know what—just because he doesn't carry the COMMERCIAL STANDARDS MONTHLY on his stand. Be fair with him. Send in your subscription, with the necessary \$1, to the Superintendent of Documents, Government Printing Office, Washington, D. C.

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# COMMERCIAL STANDARDS MONTHLY WELL RECEIVED



*Printed Magazine Started Off With 887 Paid Subscriptions  
Gain of 177 New Subscriptions Monthly  
Was Formerly Issued as a Mimeograph Bulletin*



WHEN the division of simplification was created several years ago, it was found necessary to have some medium to keep those interested in the latest developments in the field of simplification advised. This problem was met by the establishment of a mimeograph monthly news bulletin, distributed without charge. The popularity of this bulletin, over a period of several years, steadily increased until it became one of the best known governmental bulletins. The requests for it reached a point where, beginning with the year 1929, consideration was given to the many recommendations from its readers that it be issued in the form of a printed magazine, on an annual paid subscription basis of \$1. The change became effective with the July issue. Prior to the appearance of the first number of the COMMERCIAL STANDARDS MONTHLY in its new dress, a total of 887 paid subscriptions had been received by the Superintendent of Documents, United States Government Printing Office. Since then the average monthly increase of subscribers has been 177. The new subscribers are not confined to any particular group or profession, as everyone, be he manufacturer, distributor, or consumer, has an interest in waste elimination. One well-known steel company last month placed an order for 63 subscriptions for its various officials. A prominent university is having the students use the magazine in connection with their studies in business administration. As one sales manager recently wrote us, "the business executive to-day has very little time for magazines. There are more than he can ever hope to read. Therefore he must choose his magazines with great care. I feel, however, that my subscription to the COMMERCIAL STANDARDS MONTHLY is one of the best investments that I ever made with a dollar. Incidentally, my order to your 'simplification bulletin' was sent with a 'simplified check' form." Having made this most gratifying start with the magazine, the Bureau of Standards would greatly appreciate receiving the comment and criticism of the readers, especially as they pertain to improving the magazine.

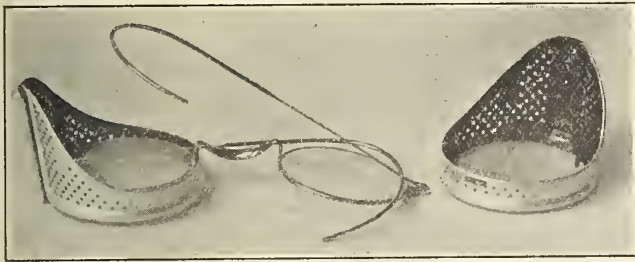
## GOGGLES—A NECESSARY PART OF INDUSTRIAL OPERATING EQUIPMENT

**Conservation of Eyesight Important Economic Need; Proper Goggles Not Only Protect Eyes from Mechanical Injury but Also from Heat, Glare, and Harmful Radiations; Bureau of Standards Publishes National Safety Code for the Protection of Heads and Eyes of Industrial Workers**

By HAROLD S. NORTON, *Associate Safety Engineer, National Bureau of Standards*

As long as our eyes function normally, we are apt to give them entirely too little care. When vision seems to falter, or some accident happens to the eyes, then we come to a full realization of their value.

Conservation of eyesight surely demands prominence among our safety investigations. Industries annually take the toll of a multitude of lives, limbs, and eyes, and we are told that among the number of permanent-disability injuries occurring in industrial establishments, the number of eyes lost exceeds the combined losses of legs, arms, feet, and hands. A very large percentage of these losses is avoidable, and, in the case of eye accidents, can be eliminated by using proper eye protectors where the hazards exist.



*Clip on cups which can be attached to corrective spectacles*

Goggles function to protect the eyes from mechanical injury, heat, glare, and harmful radiations. Perhaps the greatest number of eye accidents are caused by flying chips, spalls, dust, rivets, and corrosive liquids, such as acids. These hazards may be divided into smaller groups so that more specific protection may be applied for each individual group. Although it is important to stress protection against all forms of eye hazards, the occupations producing the most numerous casualties will be considered first.

### **Mechanical hazards to the eye.**

Perhaps the reason for the great number of eyes lost or injured as a result of mechanical cause is that the hazard is usually not apparent until the accident occurs. Even the foremen or others in charge may not realize hazards of this sort in their shops and casualties persist as a by-product of industry.

Occupations, such as chipping, riveting, and calking involve a hazard where comparatively large particles are thrown into the air with considerable force. Although any part of the body may be injured or lacerated, the eye is the most delicate part and there is less chance of fully recovering from an eye injury. It is true that a hot flying rivet might strike a man wearing goggles, and not only break the goggles but also put out his eye. However, it is also true in this case that goggles do not present an increased hazard.

On the other hand, experience has shown that safety goggles have prevented innumerable eye casualties due to flying rivets. Many pairs of goggles have been destroyed, but the eyes have been saved. This also applies to chipping, calking, quarrying, and mining.

### **Practical requirements for frames and lenses.**

The specifications for goggles must withstand severe mechanical tests. On the other hand, the constructional requirements should be such as to provide comfort along with ruggedness in order that the goggles will be fully acceptable to the workmen. They should be as light as practicable and still be strong enough to stand considerable abuse.

The frames may be made of a variety of materials, composition, fiber, or metal. Metal parts should be noncorrodible and tough enough to be reasonably bent without being broken. Other materials than metal should be fire resisting and tough enough to stand slight distortion without breaking. Where occupations require the worker to be near intense heat or where hot objects are likely to come in contact with the goggles it is recommended that metal frames be not used, as metal is a good conductor of heat and may cause discomfort to the wearer where it comes in contact with the skin.

The lenses should be tough enough to withstand comparatively sharp blows and be transparent enough to transmit most of the incident light. The glass used in lenses of this kind can be heat treated so that it will be toughened. Another feature of lens construction is that of making it optically correct. The surfaces should be so ground that they will be parallel to each other. In this way the object will not be distorted by either prismatic or spherical effect. On the other hand, processes have been perfected by which the lens can be ground to correct for optical defects so that the temper of the glass is little affected. The strength of lenses can also be increased by making them in toric form with the convex surface on the outside. This forms an arch effect and distributes the shock over the entire lens.

There are many occupations and operations that involve the hazard of flying material coming from directions other than straight in front of the operator. In these cases side shields on the goggles are necessary, or eyecup goggles may be used to accomplish the same purpose. Objections have been advanced to using side shields because they lessen the angle of vision and may be a detriment to the user rather than a protection.

Of course, these objections are often justifiable, as the side view is essential when in the vicinity of power shovels, derricks, and cranes. However, side shields and eyecups are now constructed to allow



a limited side view by means of a screen, or perforations at the side.

### **Bureau publishes safety code.**

The Bureau of Standards has published the National Safety Code for the Protection of the Heads and Eyes of Industrial Workers, in which a drop test for strength is specified. A spherical steel ball 0.0565 ounce (16 g) in weight within 2 per cent, approximately 0.625 inch (1.59 cm) in diameter, shall be dropped 10 times from a height of 21.2 inches (54 cm) on the center of the horizontal outer surface of the lens when held in the frame.

The lens shall be supported by the rim of the container only on a rubber washer 0.25 inch (6.4 mm) thick, secured to the top of a board or block of wood. If 1 out of 6 lenses is fractured in this test, 4 more lenses shall be tested and if any one of these is fractured, the lot shall be rejected.

Another test increases the height to be dropped to 39.37 inches (1 m). If 1 out of 6 lenses tested is fractured in such a way a fragment of glass weighing more than 0.39 grain (25 mg) leaves the bottom surface, 4 more lenses shall be tested, and if one of these lenses fractures in the above-described manner, the lot shall be rejected.

There are some purchasers who require every lens in the lot to be tested, while others take a specified number as being representative of the lot.

### **Special needs in some occupations.**

Such operations as grinding and scaling require protective goggles, but strength tests on the lenses are unnecessary because they are not subjected to severe blows as in the case of riveting, chipping, and calking. Thinner and untempered lenses can, therefore, be used, and it is more practicable to have them ground so as to correct defects of vision.

There are some operations where the entire face is subject to injury, and in these cases face masks and helmets are the most desirable. It is fortunate in these cases that the operator can readily appreciate the protection afforded. Other cases of mechanical hazard where goggles will afford protection, are splashes of lime or mortar in the building and allied trades; splinters and chips of coal in the coal mines; flying pieces of glass in electric lamp and glassware manufacture; threshing, chopping wood, and some other farm activities; grain milling operations; ceramic manufacture; quarrying; road construction; woodworking; and wire manufacture.

Metallurgical operators, foundrymen and molders are subjected to splashing metal and sparks, and although face masks and helmets afford the maximum protection, the eyes, in particular, should at least have the protection of goggles which will keep molten metal from splashing into the delicate organs. The lenses in this case must be of sufficient toughness to withstand these splashes, and either eyecups or side shields are necessary to give complete protection to the eyes. The frames also must be of a material that will not burn. Metal-framed goggles, however, are unsuited for any operation where the wearer is exposed to excessive heat.

### **Eye protection in the chemical industry.**

Employees in factories engaged in the manufacture or compounding of chemicals are subjected to the danger of accidents from the same causes as workmen in other classes of manufacturing, but there are also the liquid and gaseous materials to consider.

These, in most cases, are harmful when they come in contact with the eyes, and goggles of special design are necessary. The conventional goggles for this kind of work are close fitting, unventilated, with lens holders of soft rubber. Ammonia, chlorinated lime, caustic soda, and other alkalies cause numerous painful eye injuries by the accidental entrance into the eye of these substances. Other dangerous materials are acids and dyes and explosives in the process of manufacture.

Since these chemicals are highly penetrating in nature, a close fitting, unventilated protector over the eyes is necessary, and as many of the chemicals are corrosive, soft-rubber frames are used to resist corrosion. The lenses need not be subjected to any strength tests, but they must be of clear glass of as high a transparency as is practicable. Other causes of injury in foundries are flying splinters of metal, sparks from furnace, heat of the furnace, besides emery from grinding wheels, and particles of dust and cinders.

### **Protection against glare and injurious radiation.**

One of the most insidious causes of eye trouble is exposure to the eyes of invisible ultra-violet light. These rays occur beyond the violet end of the visible light spectrum, and in industry are generated by exposing metal to the oxyacetylene and oxyhydrogen flame, and also other processes where metal is in a molten state, such as open-hearth, Bessemer, and crucible steel making, electric welding, and some furnace work. Incandescent and arc lamps also emit ultra-violet radiation.

In the extreme cases of electric arc welding and cutting, goggles are generally unsuitable, because the intensity is great enough to affect the skin of the face and neck. Helmets, hoods, or shields are necessary for the proper protection of operators and those near by.

Through experimentation it has been determined that cobalt-blue glass gives but little protection from ultra-violet rays. The Bureau of Standards has made a study of the colors of goggle lenses and a blue. (cerium-cobalt) glass has been developed that will satisfactory filter the ultra-violet light. This cerium-cobalt glass was actually produced at the bureau for experimental purposes and the transmission curves were published. This particular glass is designed for the use of furnace men who have been used to judging heats by means of the comparative intensity of light and color as viewed through goggles with lenses of cobalt-blue glass.

Although the effects of the invisible infra-red rays beyond the red end of the visible light spectrum are somewhat obscure, it is fairly well established that if sufficiently intense they may destroy the transparency of the lens and humors of the eyeball. For this reason goggle lenses should filter out these radi-



ations. Goggles which are used to protect from injurious radiations should be of the eyecup type and no unfiltered light should be permitted to reach the eye.

The glare of visible light also occurs in varying amounts for different operations, and colored glasses should be worn to prevent the harmful effect on the eye known as retinal asthenopia.

### General considerations.

Eye protection can be given the attention that it deserves only by proper education. It must be shown that an eye guard is as necessary as a guard to protect against loss of limb. Proper goggles should be furnished by the employer. It is the employer's duty to see that his machines have safeguards attached, and likewise goggles should become an integral part of the operating equipment.

## TO INVESTIGATE SKYSCRAPER PLUMBING

**Bureau of Standards to Resume Research in Plumbing in Skyscrapers at Request of Industry; Program to Cover Three Years' Work; Will Study Actual Conditions in Plumbing Systems**

Plumbing experiments conducted some years ago at the Bureau of Standards, in cooperation with the subcommittee on plumbing of the Department of Commerce Building Code Committee, have been resumed as the result of a recent conference at New York City, held by the committee. It will be recalled that the results of the previous series of experiments formed the basis for the so-called Hoover Code, which has had a wide influence in determining plumbing requirements throughout the country.

The scope of the previous investigation was limited both because of available funds and because of a demand for early recommendations covering plumbing in small buildings. It is intended in the present investigation to pick up the program and extend its field into plumbing installations in high buildings.

Recommendations for plumbing in such structures have already been brought out by the plumbing committee in response to continued requests, but the committee has recognized frankly that further experimentation will be necessary before the last word can be said upon the subject.

The actual experimental work will be done as before by experts of the Bureau of Standards, and the results will be interpreted by the committee so that they may be put to general use. It is estimated that the program will cover at least three years. Tentative plans covering such a period have been drawn up and preliminary investigational work is already under way. Progress will depend upon the degree of financial support given by the plumbing industry and by those who use plumbing. Enough funds have been raised through such sources to initiate the work, and it is hoped that further support will be forthcoming so that it will not lapse.

Briefly, it is proposed to investigate actual conditions in plumbing stacks, drains, and venting systems in large buildings with the object of determining the actual facts that exist there. This will be done

Strict supervision is necessary at first to maintain maximum protection. Where material of an irritant or corrosive nature is handled, goggles should be thoroughly washed after use, and if more than one person uses a pair of goggles, they should be disinfected by washing with a formalin solution made up by mixing 0.106 ounce (3 g) of 40 per cent formaldehyde to 1 quart of water.

Headbands, bows, and bridges should fit the worker so as to produce the least possible discomfort. Provision should be made for immediate replacement of broken lenses, and cases should be provided to protect goggles when not in use. When these suggestions are rigidly carried out, then the apology of compensation for lost eyes will be minimized, and the benefaction of prevention will be of increased effectiveness.

partly by inserting measuring instruments in the plumbing lines and measuring the loads that occur in different occupancies over a sufficient period of time to get a true picture of the situation. After enough data have been collected to form a basis for judgment, it will then be possible to prepare tables and other practical means for designing systems so that they will function efficiently.

## ECONOMY OF PURCHASE ON SPECIFICATIONS

**Buying on Specifications Means Economy in Purchasing; Writer in "The Modern Hospital" Summarizes Benefits to Be Had**

It is admitted that purchase under specifications involves continuous study and care, because it transfers from the seller to the buyer some of the responsibility which the seller assumes in conventional business practice. This responsibility the seller is naturally accustomed to charge for. With regard to staple and well-known supplies purchased in large or fairly large quantities, it is distinctly uneconomical to use anything but the specification method. An illustration of this point is provided by the following from an article in *The Modern Hospital*, entitled "Purchasing Strategy in Relation to Hospital Buying Costs," by John C. Dinsmore, of the University of Chicago, a pioneer in the application of specification methods to purchasing for public institutions:

The buyer for a small hospital in Chicago decided to save himself the trouble and expense of handling tax-free alcohol and substituted a special formula rubbing alcohol in its stead. The salesman handling the account made more money on a single 10-case order of rubbing alcohol than on an order for a carload of tax-free alcohol. The superintendent of this hospital saves himself the bother of handling tax-free alcohol, but he is paying rather well for his convenience.

Professor Dinsmore in another place reports that certain studies leading to scientific selection and standardization of goods, made by a number of institutional purchasers carrying on a project of group buying, brought about savings equivalent to \$300 to \$500 per hour of the expert's time employed. The above case illustrates one of the specific means by which such savings are brought about.



## ECONOMIES IN WRAPPING PAPER SOUGHT BY STORES

**Saving of Approximately \$9,000,000 Annually Is Estimated Through Elimination of 10 Per Cent in Wrapping Costs Anticipated in Survey by Dry Goods Association**

Department stores of the United States annually distribute about 3,000,000,000 packages. It is estimated that a survey undertaken by the National Retail Dry Goods Association may result in decreasing packing and wrapping costs by 10 per cent, and that approximately \$9,000,000 a year will be saved. In a recent announcement by the Secretary of Commerce, R. P. Lamont, he stated that the Department of Commerce and the division of simplified practice of the Bureau of Standards would cooperate in the survey, which will be confined to an examination of specifications for supplies and methods of using such supplies.

It is reported that there are more than 6,000 department stores, exclusive of specialty stores, in the United States, doing an annual volume of business of approximately \$6,500,000,000. All of these stores should be directly or indirectly affected.

The Department of Commerce has already conducted, or assisted in, a number of studies looking to the elimination of waste and the solution of problems now existing in the distribution field.

Elmer French, of the National Retail Dry Goods Association, Ray M. Hudson, assistant director, Bureau of Standards, and Howard C. Dunn, chief of the domestic commerce division, of the Bureau of Foreign and Domestic Commerce, Department of Commerce, state that highly satisfactory progress is being made in the survey now being made, and report that many suppliers and some trade associations have already signified their desire to cooperate.

This work, according to the Department of Commerce, may lead to the establishment of simplified practice recommendations for some of the supplies under consideration. These recommendations would be promulgated as part of the Department of Commerce elimination of waste series.

The operating committee in charge of the work consists of Merrill Osgood (chairman), of the Jordan Marsh Co., Boston; Elmer French (vice chairman), of the National Department Stores (Inc.), New York, N. Y.; William Fitzgerald, research director of the National Retail Dry Goods Association,

New York, N. Y.; Edwin L. Stoiber, stores managers' division of the National Dry Goods Association, New York, N. Y.; and R. W. Greve, of R. H. Macy & Co., New York, N. Y.

### **George A. Cooper in charge of work.**

George A. Cooper, of the division of simplified practice, is in active charge of the work now being done, and is being assisted by H. P. Dalzell. The first store to be studied was R. H. Macy & Co., of New York, N. Y. The survey was extended to Boston on November 4, the cooperating stores there being Jordan Marsh Co., the Gilchrist Co., and Conrad & Co.

The present plan is to conduct surveys in the following additional cities: Washington, Dallas, Pittsburgh, Milwaukee, Portland (Oreg.), San Francisco, Atlanta, St. Paul, Chicago, St. Louis, Los Angeles, and Detroit. Three stores in each city will be studied, and it is expected that from these stores a true picture of the conditions under which supplies are used may be obtained.

The first step of the investigation covers only the major wrapping and packing supply materials. These include boxes, folding, set-up (gift), and corrugated; wrapping paper, bags, tissue paper, twine, and gummed tape.

Studies made by individual stores prior to this survey have resulted in substantial savings, according to information received by the Bureau of Standards. One store reported saving \$6,700 in one year by slightly changing the specifications of a bag; another store, \$11,000. One group of retail stores in Boston says it reduced the number of sizes of folding boxes from 46 to 18, the number of styles of bags from 4 to 1, the number of sizes of bags from 27 to 6, and the number of sizes of gift boxes from 342 to 79.

Another group in New York effected a 25 per cent saving in wrapping paper, 11 to 16 per cent saving in tissue paper, and a saving of from 6 to 17 per cent in corrugated boxes. Other economies resulted from the reduction of breakage and lowered freight costs, delivery, and storage expenses.

## **RECOMMENDS GRADE MARKING OF LUMBER**

**Chief Coordinator Recommends That Both Hardwood and Softwood Lumber Be Grade Marked for Government Use**

Rear Admiral H. H. Rousseau, United States Navy, Chief Coordinator of the United States, has issued a statement to the heads of all Government departments and establishments, recommending that both hardwood and softwood lumber be grade marked for Government use.

This action on the part of the Chief Coordinator is the result of negotiations between the Chief Coordi-

nator's office and the National Committee on Wood Utilization. The statement of Admiral Rousseau also stipulated that grade-marked lumber is to be given preference over unmarked lumber where bids are submitted under equal circumstances.

"This is the greatest impetus which the grade-marking movement has received since its inception," said Axel H. Oxholm, Director of the National Committee on Wood Utilization, in commenting on the statement. "It is recalled that at the Government-operated sawmills in Wisconsin they started to grade mark softwood lumber last summer as a result of the committee's recommendations."



## COMPANY SIMPLIFIES ITS PRODUCT

**Simplification Cut Potential Market 95 Per Cent, but Increased Sales and Profits, States C. B. Potter; Company Manufactures Knitted Underwear**

By C. B. POTTER, *as told to Franklin S. Clark*

If there was anything a store wanted, we made it. And we counted pretty much every man, woman, and child in the United States as a potential customer for our knitted underwear. For winter trade in Sioux Falls and points north we made an "all wool, double-breasted, sleeve and ankle" type of garment. To meet the demands of less rigorous climates, or to meet the trade demand of individual customers we made garments of cotton, of part wool, of various weights, and of every conceivable style, "athletic, no sleeve, knee length; short sleeve, three-quarters leg," just to mention a few.

To illustrate what we have done to our potential market let us suppose that in 1920 we actually did have 105,780,620 potential customers for our knitted underwear. This was the country's population according to the census at that time. Assuming that was our market in 1920, on the same basis, our present market is only 1,608,283 potential consumers, multiplied by three or four, let us say. This later figure is the country's birth for 1926.

Instead of making underwear for everybody in the United States, we are now making it only for babies up to 3 or 4 years old, or thereabouts. As far as the manufacture of underwear goes, we are now specializing on only two products—infants' shirts and bands. By doing so we have clipped our potential market for underwear to maybe only 5 or 6 per cent of what it was, but we haven't decreased our actual market at all. Our sales in infants' shirts and bands are greater in volume than were those of our complete line of underwear in the days when we made "anything they wanted."

### Profits increased.

Our profits are several times as great. Our worries are immeasurably less. We are paying our operators less on a piece-work basis. Nevertheless, they are making more money than they were formerly. They are better satisfied. Our labor turnover has appreciably decreased. We have been able to reduce our inventories by 75 per cent. The general cutting down in all kinds of overhead expense has been tremendous.

The story of how we managed to bring about simplification goes back to the boom times of the war and the slump that followed, as many changes for the better in America's ways of business do. We had seen what Henry Ford had done. Personally, for a number of years I had thought that I would like to try applying his methods to the making of knitted wear,

but we were hectically busy. I choose that adjective advisedly. Orders were seldom shipped on time, we had so many of them. We had a battery of correspondents racking their brains for plausible explanations; we had several men tracing down the causes of delay in production; a certified accountant and numerous assistants were taxed to capacity to keep the books straight. Office space had become so crowded that we had to squeeze desks into every available odd space, but by sheer volume the stream of orders had kept us going. If it hadn't been for the slump we would probably have kept right on making a hundred-and-one different styles of men's, women's, and children's shirts and drawers and union suits to-day, a hundred-and-two to-morrow, and a few more next week. For there seemed to be no end to the variety our customers demanded.

### Large inventories on hand.

But the slump found us with large inventories of manufactured goods and no customers to demand goods of any variety. We managed to clear out our excessive invoices to quite an extent by the expedient of opening a factory salesroom. That proved so successful, by the way, that we still have it. But the future

didn't look favorable, so we considered, unless we could somehow manage to meet what promised to be increasingly stiff competition. Simplification was the instrument chosen to apply to the task that confronted us. Once we had decided upon it we applied the method in no halfway or faint-hearted manner.

For the time being it necessitated curtailed production to somewhat beyond the extent we should have been forced to curtail it in any event because of the slump. It meant virtually the erasing from our lists of thousands of good small customers, some of them of many years' standing. Even now we have fewer customers, fewer salesmen; but what customers we have are better customers and they give us larger orders. We are selling more goods and to better advantage. We tell our salesmen that the Potter Knitting Co. doesn't have to take anybody's smoke when it comes to infants' shirts and bands. They accept that as gospel, and have good reason so to do. Under such circumstances it isn't hard for them to convince others of it.

### Reduced inventories by 75 per cent.

A 75 per cent reduction in inventories has been mentioned as an important saving in overhead expense. This reduction in inventories has been two-

This article by Franklin S. Clark, of North Amherst, Mass., is based on an interview that he had with C. B. Potter, president of the Potter Knitting Co., and which he submitted to the Shaw Simplification Contest. The article describes the effect of simplification when applied by an individual manufacturing concern.



sided, in raw materials and in manufactured goods as well. We have found, for example, that we can make, say, 1,000 dozens of infants' shirts with only such stocks of buttons, silk, needles, and trimmings as would be required. And, as for our inventories of manufactured goods, there isn't the recurrent accumulation of odds and ends that there used to be. We know what we are selling as definitely as we know what we are making. And we know how long it is going to take us to sell as surely as we know how long it is going to take us to manufacture. It isn't difficult to manipulate a few controls with precision; conversely, too many, we know from experience, breed confusion.

Then, too, we have been able to effect worthwhile savings in the use of materials. The savings have been greatest in the materials used to finish our product, such as button bands and trimmings. There is never such a thing any more as a certain amount of material left over after finishing up an order, or a run, of a special type of garment. It's all one continuous order or run now. There's no stopping and beginning again.

Often, before we adopted simplification, a girl might be put on seaming in the morning and making buttonholes in the afternoon. Under the present scheme of things, she either seams or makes buttonholes all day and every day, and soon comes to be an expert.

For example, when infants' shirts were only one of our lines of underwear we expected production in the seaming operation of only about 30 dozens a day. At present our girls seam from 50 to 60 dozens a day. We have shared this advantage in increased efficiency with our employees by placing the piecework rate at a figure which makes a material saving for us and yet enables them to earn considerably more than formerly.

### Reduced overhead.

There isn't near the worry of administration that there used to be. The difficulties, which are now a

thing of the past, that we used to have in filling orders on time have already been mentioned. The necessary accounting and paper work for so many different lines, combined with continual delays in the shipment of orders, delays in getting in a multiplicity of kinds of materials, in finding them, and other forms of lost motion, required, roughly, twice the clerical force that we now have.

We have found it possible to further simplify administration work by cutting away unnecessary price classifications in our finished products in some cases. In infants' shirts and bands, for example, we average our prices for sizes. The difference in the amount of material required for the various sizes is, in fact, such a small item compared to the other elements of cost that in any event it wouldn't amount to much. By averaging it we save unnecessary bookkeeping. A mother of a very young baby pays a few cents more for his apparel than she would otherwise, perhaps; but when he gets older she pays less. And in the end she doesn't have to pay as much because she isn't charged for the unnecessary bookkeeping.

We have, of course, taken care not to carry things too far in our program of simplification. We employ a variety of weights and kinds of fabric in the making of infants' shirts and bands, just as we did in the manufacture of a complete line of undergarments.

Another important one of our products is bathing suits. Here, too, we have accomplished striking results by simplification. We no longer make any fancy bathing suits. They are all knitted in the same way, elastic ribbed, and conform to a few standard styles. What is more, they are all of the same weight; though, of course, we make them in a variety of colors. Just as we did in underwear, there was a time, however, when we used to make most any kind of a bathing suit anybody wanted. We don't now, but we can put better value into those we do make. Because of the exceptional value and satisfaction these suits give we don't have any particular trouble in selling them; in fact, here again the total volume of sales in the simplified line exceeds that we attained at greater trouble with a more diversified offering.

## ANNUAL REPORT OF BUREAU OF STANDARDS RELEASED

Report of Director of Bureau for Fiscal Year 1929 Now Purchasable from Government Printing Office

The printed copies of the annual report of the Director of the Bureau of Standards for the fiscal year ended June 30, 1929, "Miscellaneous Publication No. 102," Bureau of Standards, is now available for purchase from the Superintendent of Documents, Government Printing Office, Washington, D. C., at a cost of 10 cents each.

In his report, which is made annually to the Secretary of Commerce, the director reviewed the work of the bureau for the past year. The various outstanding accomplishments are grouped according to the subjects for which the Congress had made specific appropriations. These subjects are testing structural materials; testing machines; investigation of fire-resisting properties; investigation of public utility standards; testing miscellaneous materials; radio re-

search; color standardization; investigation of clay products; standardizing mechanical appliances; investigation of optical glass; investigation of textiles. etc.; sugar standardization; gage standardization; investigation of mine scales and cars; metallurgical research; high-temperature investigation; sound investigation; industrial research; testing railroad-track and other scales; standardization of equipment; standard materials; investigation of radioactive substances and X rays; utilization of waste products from the land; investigation of automotive engines; investigation of dental materials; and the various problems undertaken for other departments of the Federal Government.

The director urged the further extension of the commercial standards group in its program of cooperation with business; and more adequate support for fundamental research relating to standards and the determination of fundamental constants of importance to science and industry, including further development of cooperative research with industry.



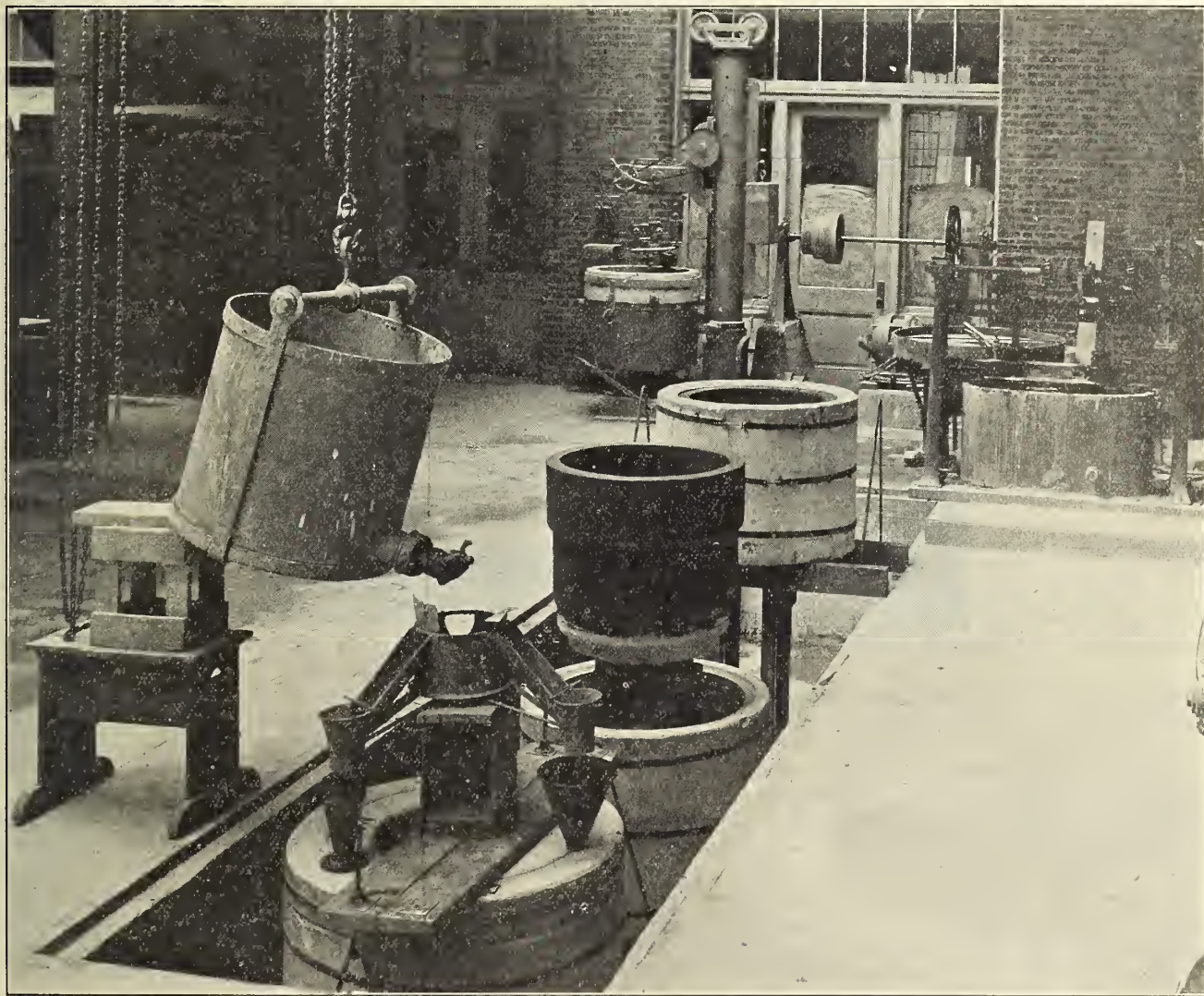
## FIRE BRICK, GLAZED WARE, AND ENAMELED WARE IMPROVED BY STUDY OF MANUFACTURING METHODS

Many Kinds of Clay Products Investigated at Bureau; Marquardt Tubing Imported Before War; Many Other Industries Depend Upon Refractories

By HENRY D. HUBBARD, *Assistant to Director*

Many kinds of clay products are mixed, formed, and dried in the laboratories and kiln houses of the Bureau of Standards. Giant clay pots are used in melting the ingredients and making optical glass—another bureau enterprise. The pots will hold 1,000

6-foot lengths, thin as fine spaghetti with a bore fine as a needle. Such tubing is used in the industries in steel furnaces and other high-temperature equipment for carrying the wires of the pyrometer which measures the temperatures within the furnace.



*Apparatus used in casting pots in which optical glass is melted*

The process was developed by the bureau

pounds of melted glass (the 1,000-pound pot is the usual size. Larger ones were used in melting the glass for the 70-inch telescope mirror). To select and purify the clay so as to be iron free was an essential in making optical glass of the finest quality.

An unusual product is the Marquardt tubing made of fine clay and such other materials, as alumina, in

### **Tubing imported before World War.**

Such tubing was imported until the World War, when the bureau was asked to find out how it might be made in America. The technique was worked out and specimens comparing favorably with the imported product were successfully produced in the bureau's clay laboratories.



The brick which line steel furnaces must endure the temperatures of melted steel. The bureau has made experimental and developmental research studies of fire brick. The first step was to measure the melting points of such refractory fire brick—some of which melt at temperatures as high as 3,600° F. To withstand the extreme heats of metallurgical operations such refractory brick must be made to measure.

#### Refractory industry underlies metallurgy.

The refractory industry is a basic industry. It underlies metallurgy which transforms ores into metals and metals into the great alloys of which cutting tools, automobile shafts, and titanic machinery are built. To measure such melting points and indus-

tance to a number of Western States and to the Federal Government as the owner of public lands where clays of a sticky, heavy type resist the usual modes of preparation. Definite preheating procedure was devised under which such highly plastic clays may be made to behave normally after preheating—a striking example of a laboratory process making possible the use of waste clays otherwise unusable.

#### Study of discoloration of brick walls.

Another type of research is the study of discoloration of brick walls, known as efflorescence. Procedures were tried in burning and drying which largely reduced the likelihood of this condition. Proper use of brick in brickwork so that minimum moisture



*Dr. George K. Burgess, Director of the Bureau of Standards (right), and Dr. C. C. Crump, Professor of Astronomy at Ohio Wesleyan University, examining the disk after the hole had been cut*

The "core" is resting on the surface of the disk.

trial temperatures optical pyrometers are used, for at such temperatures ordinary methods fail.

Among the subjects of researches and publications concerning them which the bureau has completed are: Fire brick, their manufacture, properties, uses, and specifications (a documentary résumé of the subject for the technician), the use of the interferometer in measuring thermal expansion of ceramic materials, the testing of clay refractories, melting points of fire brick, the function of time in vitrifying clays, the dehydration of clays, effect of overfiring upon the structure of clays, the use of sodium salts in purifying clays and in the casting process, the properties of some European plastic fire clays, the properties of American bony clays and their use in graphite crucibles and glass pots, porosity and volume changes of clay fire bricks at furnace temperatures.

To permit the use of excessively plastic clays which crack and check on drying, an experimental research was completed. The results were of peculiar impor-

enters the wall will further minimize such efflorescence.

A fundamental type of research comprises the experimental studies of the materials other than clays entering into pottery and other clay products. Recent research results on feldspar are examples. Here the effect of feldspars having different characteristics was determined. Such kinds of measured data are most effective in enabling the ceramist to design the make-up of his ware to produce the properties he desires, such as an architect designs a building for a specific purpose.

#### Glazed ware studied.

Studies have recently been made of crazing of glazed ware after extended service. In some cases it was found to be caused by expansion of the body. If glazed ware is exposed to the weather it may absorb moisture, thus increase the volume of the body, volume of the glaze remaining unchanged. The resulting



strain cracks the glaze and forms the familiar crazing characteristic of glazed ware. Recent studies of boiler-furnace refractories are progressing well. In a study of glazes 110 special glazes have been tested to determine the elastic and expansion properties.

When the enameled metal-ware industry was threatened through the fish scaling of its product, the industry requested the bureau to find the cause and

cure for the flaking which injured the utility of the ware. Experimental research on the relative expansion of the metal and of the enamel was conducted. The difference in the expansion of the two was a cause. A new enamel was worked out in experiments in which 40,000 specimens were prepared and studied. The product was permanently improved and the closing down of plants was averted.

## GRADE MARKING IMPORTANT

**The Dealers' View of Grade Marking Presented by Writer in Trade Magazine; National Builders' Supply Association Favors Grade-Marked Sewer Pipe**

In commenting upon the large saving from the adoption of simplified practice by various industries, in the November issue of the Bulletin of the National Builders' Supply Association, a staff writer of that publication makes some very interesting comments under the heading of "Grade Marking Also Important."

"Supplementing the simplified-practice plan is that other and more important effort, from the viewpoint of the dealer in building materials, the grade marking of all manufactured products," he said, adding that "this has been adopted by the lumbermen alone in the material field. It should be followed by each line in which there is more than one grade offered.

"Some time ago the National Builders' Supply Association made request of the sewer-pipe industry that it grade mark all sewer pipe, but so far no action has been taken by the manufacturers. This isn't altogether surprising, considering the lack of unity in the industry. Eventually it doubtless will be done, but there is no telling how soon.

"These two reforms, and they may safely be so termed, naturally go hand in hand. It is difficult to conceive of anything which would more beneficially affect certain branches of the building-material industry than standardizing and lessening the number of sizes manufactured, and the marking of these materials honestly as to grades. Where there are different grades, as there are in the case of sewer pipe, and nothing to distinguish the one from the other save their actual quality, there is opened a tremendous opportunity for substitution. And this condition isn't beneficial at all. It offers an easy way to several varieties of unethical practices.

"This question of grade marking hasn't received the serious consideration it is inevitably destined to have. It will be one of the subjects to receive considerable attention at the next annual convention."

## PENNSYLVANIA ELECTRICAL CODE

In connection with the use of American Standards Association safety codes in industry, it is of interest to note that the Pennsylvania State Department of Labor and Industry, has just issued a revised electrical safety code made up of parts 1, 3, and 4 of the National Electrical Safety Code.

## SCREW STOCK SPECIFICATIONS

**A. S. T. M. Cooperating with S. A. E. on Screw Stock Specifications**

Arrangements have been completed between the Society of Automotive Engineers and the American Society for Testing Materials for joint consideration by the two societies of proposed revision in the requirements for Bessemer screw stock contained in the society's standard specifications for commercial cold-finished bar steels and cold-finished shafting. A joint committee has been formed for this purpose.

For the Society of Automotive Engineers the work is in charge of its iron and steel division, of which J. M. Watson is chairman. For the American Society for Testing Materials the work is in charge of the committee on steel, through the subcommittee on commercial bar steels, of which J. J. Shuman is chairman.

## STANDARD SIGNAL PLAN SOUGHT FOR AIRPLANES

**Committee to Study Problem to Obtain Uniformity**

The Department of Commerce, through a special research committee, will seek uniformity in methods of signaling information to airplane pilots in both day and night service, the Assistant Secretary of Commerce for Aeronautics, Maj. Clarence M. Young, states.

There exists an urgent need for the development of standard signal systems, suitable for both day and night use, for controlling air traffic on and in the vicinity of airports, and for communicating special information to pilots. In an endeavor to bring about uniformity in this matter and with the hope of arriving at a solution of the problem, this committee will make a comprehensive study of the subject and report its findings and recommendations.

The following persons have been designated to serve on this committee: Charles H. Helms, National Advisory Committee for Aeronautics; Lieut. Newton Longfellow, Army Air Corps, War Department; James Murray, Aeronautical Chamber of Commerce; Commander F. D. Wagner, Bureau of Aeronautics, Navy Department; Col. Harry H. Blee, chairman, aeronautics branch, Department of Commerce; Capt. F. C. Hingsburg, airways division, Bureau of Lighthouses, Department of Commerce; Dr. J. Franklin Meyer, Bureau of Standards, Department of Commerce; and A. Pendleton Taliaferro, jr., secretary, aeronautics branch, Department of Commerce.



## GLASS CONTAINERS SIMPLIFIED

**Schedule for Milk Bottles Reduced Variety from 49 to 4; Preserve Jars from 36 to 8; Jelly Glasses from 24 to 7; Apple-Butter Jars from 6 to 4; Other Programs Reviewed**

By W. E. BRAITHWAITE, *Division of Simplified Practice*

Consideration of the general problem of how best to pack, handle, transport, and distribute commodities after manufacture is engaging the attention of many industries. The question of containers is an important one, and the solution of existing problems of diversified sizes, dimensions, types, capacities, etc., would, in the opinion of many, benefit not only the industry immediately concerned, but the carriers and all users of the commodity as well.

The manufacturers, distributors, and users of glass and other type of containers are finding in simplified practice a practical method for eliminating waste and reducing costs. Simplified practice is applied by the collective action of all concerned, to eliminate needless variety in sizes, dimensions, etc., of manufactured products. This method is based on the sensible avoidance of waste caused by excessive and uneconomic diversity.

The establishment of the division of simplified practice within the Department of Commerce in November, 1921, has provided a neutral meeting ground or centralizing agency through which manufacturers, distributors, and consumer groups can meet to discuss their mutual waste problems and decide upon elimination of excessive variety. Through the cooperative services afforded American industry by the Department of Commerce, more than 100 different industrial groups have developed simplified practice recommendations under the auspices of the division of simplified practice, which have resulted in large savings to all concerned.

These simplifications are exemplified by the reduction of varieties in sizes and dimensions, etc., of paving brick from 66 to 5, to a similar reduction of varieties in the case of grinding wheels, from 715,200 to 254,400. Of particular interest to the glass-container group are the following recommendations.

### **Variety of milk bottles reduced.**

On March 6, 1923, a joint conference of representatives of manufacturers, distributors, and users of milk bottles met at the Department of Commerce and developed a simplified-practice recommendation, which has resulted in reducing the existing variety of these bottles from 49 to 4.

This conference also reduced the variety of diameters of milk-bottle caps from 10 to 1.

A brief analysis of the replies received from 15 bottle manufacturers that have accepted this recommendation show that economic advantages, such as fewer molds and lower cost for replacement, lower production costs, greater interchangeability, greater labor efficiency, and standardized equipment, would result from the adoption of this constructive program.

### **Variety in preserves, jellies, and apple butter containers reduced.**

Another recommendation of direct interest to the packers of food products is the simplified-practice

recommendation which was adopted at a recent general conference of manufacturers, distributors, and users of glass containers for preserves, jellies, and apple butter.

In introducing the subject of simplification at that conference, which was held in Cleveland, Ohio, September 18, 1928, in conjunction with the convention of the National Preservers' Association, J. P. Thomy, president of the association, said that "the cost to the industry of stocking a multitude of sizes of packages involves an economic waste which we, as intelligent business men, must condemn. This waste includes not only abnormal and unnecessary capital investment, but inefficiency in our factory operations. There has been prepared for this conference, the basic facts which, as intelligent men, we must consider, not as individuals seeking to justify our personal selection of sizes, but as a combined group of men resolved to take advantage of this opportunity to secure the elimination of the packages which are unnecessary and therefore uneconomical."

The conference unanimously adopted a recommendation reducing the sizes of preserve jars from 40 to 8; jelly glasses from 25 to 7; and apple-butter jars from 6 to 4, based on the avoirdupois weight of the food content. The proposed schedule of stock sizes became effective on January 1, 1929, for new production, and January 1, 1930, was set for clearance of current stocks of eliminated varieties, subject to annual revision by a standing committee of the industry.

### **Glass bottles variety reduced.**

A joint simplified practice committee, consisting of representatives of the glass-bottle and carbonated-beverage industries, submitted a tentative simplified practice recommendation to the division of simplified practice with the request that arrangements be made for a general conference of manufacturers of bottles, soft drinks, bottle boxes, cartons, filling and labeling machinery, etc. The tentative recommendation as developed by the committee, and the final recommendation as adopted by the general conference, were based on the results of a variety survey conducted by the committee. Standards were adopted for capacities, heights, diameters, and weights of glass for soda and imported ginger-ale shapes, water and water-shape ginger-ale bottles, and beers, export, select, or C. S. shapes.

### **Pharmaceutical containers under survey.**

Another simplification program of importance is that for glass containers used in the drug and pharmaceutical industries. A very strong, simplified practice committee, headed by Philip I. Heuveler, president of the Glass Container Association, is working on the development of a simplified-practice recommendation to cover a line of standard stock items for prescription ware, etc.



At the present time a subcommittee, of which W. S. Richards, of Owens-Illinois Glass Co., is chairman, is preparing a set of questionnaires for the purpose of ascertaining the variety of bottles and jars produced during 1929. The results of the survey will appear in a consolidated report from which the simplified practice committee of the industry will prepare a tentative recommendation for consideration at a subsequent general conference of all interests.

The realization of the economies inherent in this recommendation (as in all other recommendations) is

definitely dependent upon the whole-hearted voluntary cooperation of all elements in the matter of adherence to the recommended schedules. It is believed the manufacturers of glass containers, the packers of preserves and jellies, the wholesale and retail grocers, the consumers and all others concerned will derive such tangible benefits from this simplified practice program, that it will become desirable to extend the application of the principles of simplification to containers used in the packing and shipping of other food products.

## SPECIFICATION FOR MOTOR FUEL

### New Federal Specification for Motor Fuel Based on Results of Research Conducted at Bureau

Ten years ago one called for gasoline and seldom asked who made it or what was its other name.

The present glowing advertisements of many motor fuels under attractive names have resulted partly from the fact that more is known now than formerly about what constitutes a good gasoline. The Bureau of Standards by its research has added much to this knowledge. Specifications on which the Government purchases gasoline have recently been rewritten to meet better the needs of the service.

The various tests included in the Federal specifications are intended to secure good starting, acceleration, and good performance, and to protect the purchaser from crank-case dilution, corrosion of parts, sticking of valves, and "vapor lock." The bureau believes that local purchasers of gasoline in large quantities can secure better gasoline by purchasing on specification, which can be changed from time to time to meet local or temporary conditions.

## PROMOTION OF BRITISH STANDARDS

The helpful attitude of British industries toward the work of their national standardizing body, the British Engineering Standards Association, is demonstrated in a report of a meeting, early this year, of the London Chamber of Commerce. Percy Donald represented the chamber on a committee set up by the president of the board of trade to investigate ways and means of encouraging standardization of British products.

On the motion of Donald, the council approved and sent forward to the board of trade a proposal that Government departments and other large buyers should include in their standard form of tender the following clause: "All goods not otherwise specified, to be in accordance with British Engineering Standards Association specification, where such exists." Subsequently, support for this resolution was obtained from the Royal Institute of British Architects, the Association of British Chambers of Commerce, the Federation of British Industries, the National Federation of Iron and Steel Manufacturers, the British Electrical Manufacturers' Association, and the British Engineers' Association.

## BOTTLES FOR CARBONATED BEVERAGES

### Conference Held in November Approved Proposed Simplified List of Stock Bottles for Carbonated Beverages

A general conference of representatives of the bottle manufacturers, bottlers of carbonated beverages, bottling machinery manufacturers, and others interested, held last month at Atlantic City, approved a proposed simplified-practice recommendation for stock sizes and capacities of bottles for carbonated beverages.

In order to allow ample time for necessary adjustments and for clearance of stocks of eliminated varieties, the effective date for this recommendation has been set for September 1, 1930. The conference authorized the appointment of a standing committee to consist of representatives of the manufacturers of bottles, carbonated beverages, bottling machinery, paper and wooden boxes and crates, molds, and caps, respectively.

## BULLETIN ON MOTOR-VEHICLE HEAD LIGHTING

A most interesting document for the motorist is Bureau of Standards Circular No. 276, "Motor-Vehicle Headlighting." The requirements for good road lighting are discussed as well as the principle of operation of head lamps. Few so-called antiglare devices have been found to be really effective, and the most practical solution to the head lighting problem under present conditions is the proper adjustment of lighting devices by manufacturers and sales agencies on new cars and careful maintenance of such adjustments by owners and drivers.

The method used at the bureau for making laboratory tests on electric head-lighting devices are briefly described in this circular. State laws and regulations are discussed, and suggested paragraphs for a State law presented. Instructions for the adjustment of head lamps are made clear by photographs. In the Appendix is contained the specifications under which tests for approval of types of devices by State officials are made.

This circular, which was prepared by R. E. Carlson, formerly of the Bureau of Standards, is purchasable from the Superintendent of Documents, Government Printing Office, Washington, D. C., at a cost of 20 cents per copy.



## INDUSTRY EVALUATES COTTON DUCK SIMPLIFICATION

**Simplification Program Initiated in 1924; 460 Weights and Widths Reduced to 90; Industry Has Found Simplified Schedule Provides Better Service at Less Cost**

By H. P. DALZELL

In 1924 the members of the Cotton Duck Association became interested in the possibilities of simplifying the varieties of sail and numbered cotton duck. A survey by a committee of the association showed that at that time there were being produced 460 different weights and widths of cotton duck. The division of simplified practice was requested to assist in the development of a simplified-practice program, and for that purpose a general conference was held at the Department of Commerce in Washington.

The tentative schedule submitted to the conference for consideration proposed to reduce the 460 weights and widths to 280, within the range from 22 to 144 inches in width. The committee's findings showed that, of these 280 items, 87 would take care of 80 per cent of the demand. Following a general discussion, the conference unanimously approved a recommendation listing the above 87 items, in addition to 7 others, making a total of 94. These varieties were the only ones to be carried in stock.

In addition, there were listed 316 items classified as "specials" which were to be made on order only, and then in units of not less than 500 yards. The conference decided that as far as possible the manufacture of "specials" be restricted to units of 1,500 yards, believing that this represented the minimum at which operating efficiency is obtainable. The simplified practice recommendation became effective November 1, 1925, and a standing committee was appointed to hold meetings periodically for the purpose of making such divisions as experience might show to be desirable.

Because of the success which attended the recommendation in its original form, the standing committee deferred calling a revision meeting until January, 1927. This committee considered all suggestions received from the industry and approved the elimination of 7 items and the addition of 3, making a net reduction in the recommendation of 4 varieties. The recommendation as now in effect, therefore, includes only 90 items and widths, the reduction from the original 460 items being approximately 80 per cent.

### Survey of results.

After this recommendation had been in effect for more than a year, a letter was addressed to the manufacturers, distributors, and users of cotton duck who had accepted the recommendation asking that they review their experience with it, with a view to determining its benefits in actual application. Typical excerpts from the replies to this survey follow:

"Because of the continually changing conditions in the textile market which affect the value of our inventories and the class of goods which we manufacture," one manufacturer said, "it is extremely difficult for us to give you any actual figures as to the savings which the simplification program has enabled us to make. We have certainly saved many thousands of dollars a year by lessening interruptions for the readjustment of our machinery, because of the fewer changes necessary since the number of standard fabrics has been so materially reduced.

"Savings resulting from reduced inventory and increased turnover have also been substantial. In addition, there have undoubtedly been savings in the amount of waste made in our plant. A reduction in weights, widths, and style is always accompanied by a corresponding reduction in this most aggravating source of manufacturing expense."

"We regret that we are not able to give you an expression in dollars and cents of the value of the simplified practice for cotton duck, nor are we able for reasons discussed in previous correspondence to express in percentage the degree of adherence to the

simplified list," another correspondent connected with the same company quoted in the above letter said. "However, the fact that it is of the greatest value to the industry and that it is being almost universally adhered to in this country is beyond question.

"The multiplicity of items that we were formerly obliged to carry in stock is now a thing of the past. This has reduced the capital formerly required, lessened the interest charges, and reduced warehouse cost. All without impairing in any way our service to distributors and consumers. The reduction in variety has made possible the lowering of manufacturing costs. Because of the keen competition existing this saving has certainly been largely passed on to the consumer. In our opinion, the establishing of the simplified practice for cotton duck has without doubt been of the greatest assistance in bringing about a more economical production and distribution of our goods."

"We are glad to advise that simplified practice has been of tremendous assistance to us in reducing inventory, increasing turnover, decreasing selling expenses, etc.," another manufacturer, who is also a distributor of cotton duck said. He discussed the difficulty of evaluating the benefits in the case of this commodity, which in his firm is handled with others of a similar nature, and concluded: "We might say in passing that while we have not been direct party

This is the eighth article of a series that are appearing in the **COMMERCIAL STANDARDS MONTHLY** demonstrating the results and benefits that have resulted from the adoption of simplified practice. Copies of the mimeographed report of the survey on cotton duck, as well as that of the others, may be secured upon request to the division of simplified practice.



in adherence to simplified practice in the other commodities which you have simplified, this company has undoubtedly gotten material benefits as evidenced by reduced storeroom inventory, etc."

"We have found that simplified practice has done much for the manufacturer and jobber of cotton duck," another manufacturer and jobber of cotton duck wrote, "reducing inventory, increasing individual turnover, and while we can not give you any facts in dollars and cents, we are very much in favor of the simplification from the view of our experience, since it has been in effect."

"In our opinion," one manufacturer points out, in discussing the saving in time formerly lost through the necessity of readjusting machinery, "its application does tend to reduce inventories, to increase the turnover, and most effectively reduces the necessity for readjustment of machinery. We are heartily in favor of simplified practice, and we feel that in the cotton duck industry it may be possible to carry it to an even further degree than that now in use. It is rather difficult for us to give you any accurate percentage of savings that we know have been made, but we do state that with the same machinery we are turning out from 15 to 20 per cent additional products by reason of the fewer changes that we now have to make."

"We can unhesitatingly say," another manufacturer wrote, "that it is a great benefit and does help in various ways. The practical manner in which it has helped us most is that where we were formerly called upon to make up small quantities of nonstandard goods, we have now gotten away from this almost entirely. We do not think we ever made any money on the manufacture of these nonstandard sizes under former conditions, and often lost a little money, but we just went ahead and did it to keep the customer satisfied, and because others were willing to do it."

#### Distributors support program.

"Our experience in handling cotton duck under the simplified practice plan has worked out very economically to us," a distributor said. "It enables us to

order a larger stock, gives a larger turnover, and eliminates dead stock."

"We believe," another distributor stated, "that the simplified practice is a considerable advantage in cutting down the number of items which it was necessary to handle in order to take care of the general demand. We feel that most of the users of canvas have become accustomed to buying standard numbers, and it is very seldom that we have a call for nonstandard widths or weights. The advantage of this, of course, in increased turnover and small inventory is plainly apparent."

A user of cotton duck producing waterproof clothing and fabrics said in his communication that "we feel that reduction of the number of items to be considered has been of benefit in avoiding the necessity of purchasing small quantities of odd widths and numbers, the inquirer doubtless having adapted his condition to standard widths and numbers with probably little difficulty. In this general way we feel quite sure that the move has been of very great benefit to all concerned, the producer, the distributor, and the user."

#### No adherence surveys conducted.

No surveys have been conducted in this industry to determine what percentage of the total volume of production is in the simplified numbers and widths. The standing committee has not considered it necessary in view of the wide acceptance and sustained good will that this project now enjoys.

The trade associations and the individuals prominent in the industry have employed their time and thought, together with the services of the division of simplified practice to lay out a definite plan to reduce waste and thereby give better service at less cost.

The general tenor of replies to the survey of the practical results of this simplified-practice recommendation indicates that it has the whole-hearted support of the industry, and in application is producing savings well worth while. Future benefits will be in direct proportion to the degree to which industry maintains its support and interest.

## MARINE STANDARDS UNDER CONSIDERATION

### Proposed Standards for Hinged Water-Tight Doors; Care and Operation of Oil-Burning Apparatus and Handling of Fuel Oil on Ships; and Insulation Material for High Temperatures Reviewed

Several proposed marine standards, under consideration by the American Marine Standards Committee, have been handled since the last issue of the *COMMERCIAL STANDARDS MONTHLY*. The latest status of these projects is given below.

*Hinged water-tight doors.*—Proposed standards for light and heavy doors and fittings have been submitted to the technical committee on "hull details."

*Insulation materials for high temperature.*—Proposed standard specifications which have been under consideration for some time have been approved in principle by the subject and technical committees concerned, and are in process of revision to carry out suggestions and to meet certain criticisms received

from the committees. The revised drafts are to be submitted to the membership.

*Care and operation of oil-burning apparatus and handling of fuel oil on ships.*—A preliminary draft of proposed standard general instructions has been submitted to the membership of the American Marine Standards Committee and others interested to ascertain whether or not the proposal to issue such instructions meets with approval, and to elicit critical comments and constructive suggestions for improvement of the draft.

## STANDARDIZATION OF PORT FACILITIES

The American Association of Port Authorities at its recent annual convention indorsed the organization by the American Marine Standards Committee, of a technical committee on "port facilities," to develop standards in that field in cooperation with The Association of Port Authorities.



## MUNICIPAL PURCHASING AND STANDARDIZING AGENCIES

**In Making Analysis of the Specifications-Making and Specifications-Using Activities of More Than 330 Towns the Writer Divides Communities into Two Groups—Those Under City Manager Plan and Those Under Other System—Summarizes the Difference Found in Municipal Purchasing and Progress Made in Standardizing**

By R. A. MARTINO, *Division of Specifications*

Since the combined purchases of the municipal, county, and State agencies are several times as great as the purchases for the Federal Government, there is much of interest in the methods employed by these agencies in purchasing equipment and supplies with money collected from the public in the form of taxes. Some idea of the purchasing methods employed by various municipalities throughout the country can be gained from the notes below.

In some of the larger cities certain commodities are purchased exclusively either on contracts based on specifications or on trade brands, while in others, purchases are made on both trade brands and specifications. In a majority of cases, cities that have formulated their own specifications have freely made use of the specifications of national technical societies and trade associations, especially those of the American Society for Testing Materials, American Water Works Association, American Concrete Institute, American Society for Municipal Improvements, and the Federal Government.

In almost every case where commodities are purchased on specifications they are checked, either at the sources of supply before delivery or upon arrival at their destination, to determine whether or not the goods comply with the specification requirements. Some cities maintain and operate their own testing laboratories, while others engage the laboratories of colleges and universities, commercial agencies, or those of State highway departments.

### Study divided into two groups.

In making an analysis of the specifications-making and specifications-using activities of more than 330 municipalities throughout the country, it seems desirable to treat the cities in two groups—those operating under the city-manager plan and those having a different form of government.

In 51 of the 210 municipalities not having city managers the city-purchasing agency was created by action of the city council, 44 by city ordinances, 38 by provisions in the city charter, and 13 by legislative action. In 111 of the cities the purchasing agencies make purchases for all of the city departments, and in 17 municipalities purchases are made for all departments except the schools. In 47 of the cities purchases are made for only one or two departments, such as the engineering or educational.

The city purchasing agent of St. Petersburg, Fla., is authorized to make purchases up to \$300 for all departments of the city. Expenditures over that amount must be based on specifications, and bids sent out by the board of commissioners. A dual system of purchasing is employed by the city of Baltimore, in that all purchases of articles and materials which do not exceed the sum of \$500 are made by the central purchasing bureau, but all purchases in excess of that amount must be bought on contracts, the award of which is made by what is known as the board of awards.

Each of the several city departments of Newark, N. J., has a purchasing agent, who makes all purchases for his department. In 1929 a commission was elected to study plans for the establishment of a central purchasing bureau for the entire city, for the purpose of coordinating all purchases of equipment and supplies under one head. In Schenectady, N. Y., the purchasing agent is empowered to make all purchases not exceeding \$500,

“To what extent are purchase specifications used by city governments?” This is a question that has been discussed in industry for some time, and it is believed that the article by R. A. Martino, of the division of specifications of the Bureau of Standards, is both timely and informative in nature.

and all material in excess of that amount is let out by competitive bidding by the board of contract and supply.

### Purchases usually made on specifications.

In 99 cities purchases are usually based on written specifications, in 8 on trade brands, and in 79 they are based on both trade brands and specifications. Large purchases in New London, Conn., are based on written specifications, while smaller miscellaneous purchases are made on trade name or brand. In Charleston, S. C., specifications are used only in the purchase of structural materials, while in the case of subsistence for charitable institutions, purchases are made on trade brands. Usually purchases are made on contracts based on specifications in Richmond, Va., except where certain brands have proven to be more satisfactory, in which cases specifications are not used.

Specifications are prepared in 69 cities as a result of conferences of the heads of the city departments; in 31 they are prepared by individuals. In 86 cities the specifications used are based on those of national associations or the Federal Government. The city of San Francisco prepares its own specifications as a result of investigations, laboratory tests, experiment, and usage. The city of Terre Haute has adopted the specifications of the Indiana State Highway Commis-



sion, which are based on those of the Federal Government.

Both in Philadelphia and Pittsburgh specifications are formulated by the city officials requiring them, and they are usually in conformity with those of national organizations and the Federal Government.

Two-thirds of the cities using specifications are doing so with building and road materials. A few of the cities buy food, textiles, and office supplies on written specifications. Fifty-nine of the cities operate their own laboratories for acceptance testing of commodities, 82 depend largely on commercial testing laboratories, 18 on college laboratories, and 9 on State-owned laboratories. Ninety-one of the cities make use of college laboratories at times—usually State institutions.

#### **Baltimore and Portland have standards bureaus.**

A bureau of standards has been organized by the city of Baltimore to formulate standards and specifications and recommend, but not compel, their use by the city departments and bureaus. The bureau of standards of Portland, Oreg., is conducted under the authority of the department of public works. It co-operates with other city bureaus in the selection and adoption of specifications, and makes checks of deliveries purchased under specifications. With the bureau of building rests the responsibility for the enforcement of the city's building code issued by the department of public works.

Several of the cities have appointed standardization committees for the purpose of formulating standards and specifications for use by the various city departments and bureaus.

In Detroit, Mich., except for the school board, the department of purchases and supplies has full authority to purchase all materials for the city, including utilities, such as the water board, public light, and street railways. A standards committee devotes considerable time to the study of standardization research carried on by numerous technical societies, in an attempt to develop such standards and specifications as are required by the city departments.

The charter of the city of St. Louis, Mo., provides for the creation of a board of standardization, consisting of the comptroller, the supply commissioner, and the president of the board of public service. Specifications are drawn up by the board of standardization after study has been made of existing nationally recognized specifications for the commodities commonly purchased for city use.

Among the municipalities, New York City has formulated and utilized the greatest number of purchase specifications, more than 1,600 specifications for 42 different classes of commodities having been prepared for this purpose. Practically all of the work relating to standardization is conducted by the department of purchase, and recommendations for standards are forwarded to the board of estimate and apportionment. All standards adopted by this board are compulsory on all city departments.

Three agencies are concerned with the purchase of commodities under specifications for Los Angeles,

Calif.—the city purchasing agent, the purchasing agent for the harbor department, and the purchasing agent for the department of water and power. The last-mentioned department has authority to compile or select specifications and make purchases of all materials, supplies, and equipment for use by the bureau of water works and supply, and the bureau of power and light. The city purchasing agent formulates and makes purchases for all departments except those earning their own revenues.

#### **City manager cities reviewed.**

Listed in the 1929 Yearbook of the International City Managers' Association are nearly 400 municipalities which have adopted the city-manager form of government. A survey of these cities shows that most of them are making use of the specification method of purchasing. The city-manager plan has given rise to the need for specifications and for centralization of city purchases under one head, in that the city manager is vested with complete authority for the business affairs of the city, and he is, in turn, directly responsible to the city council or commission.

In 46 of the 120 city-manager cities from which detailed information has been obtained, the purchasing agency was created by provisions of the city charters, 22 by city ordinances, 13 by action of the city council or commission, and 5 by legislative action. In 73 of these cities the purchasing agencies make purchases for all of the city departments including the schools, and in 31 cities, purchases are made for all departments, but not for the schools. Purchases are based on written specifications in 32 cities, and on trade brands in 23, and on both trade brands and specifications in 51 cities.

In 16 of the cities the specifications used are prepared by individuals, in 22 these are prepared as the result of conferences of the heads of the city divisions, and in 27 cities the specifications are based on those of national organizations, while in other cities only part of their specifications are based on those national societies and associations.

#### **Uses specifications for building and road materials.**

Seven-eighths of the cities using specifications are doing so with building and road materials. Specifications are also used for the purchase of fuels, fire apparatus, tires, electrical equipment, and office supplies. Twenty of the cities operate laboratories for testing some of their commodities, 35 depend upon commercial testing laboratories, 20 make use of college laboratories (largely State institutions) for most of their testing, and 25 more use college laboratories exclusively to conduct their test work.

Under the city-manager form of government in Cincinnati, Ohio, the purchasing agent, under the supervision of the city manager, makes all purchases for the various city departments and the rapid-transit board. Specifications are formulated by the departments issuing requisitions in conjunction with the purchasing agent and other interested departments. All testing for the city is conducted at the bureau of city tests, located at the University of Cincinnati.



## NEED FOR GARMENT SIZE STANDARDS

**Garments Made Smaller Than Label States, Says Writer; Manufacturers Have Not Been Using Same Standards of Measurements; Origin of Measurements Used Not Known; Review Given of Scientific Methods of Securing Size Definitions**

By RUTH O'BRIEN

As was so ably pointed out in the July issue of the *COMMERCIAL STANDARDS MONTHLY*,<sup>1</sup> the need for size standardization of ready-to-wear garments is being felt acutely by all connected with this rapidly expanding industry. Perhaps no groups are realizing the difficulties of the present situation more than the retailers and consumers. They are always likely to be the ones who suffer most during the developmental stages of any industry.

As it now stands, there are a number of aspects to the problem. First, there is the pernicious practice of delivering garments that are smaller than is indicated on the labels they carry. For example, in women's wear, often garments are labeled as 36 bust which, when measured, are found to be much smaller. In connection with children's clothing, this has been carried so far that a ludicrous situation has resulted. There is practically no garment on the retail counter to-day large enough for a normally developed child of the age for which the garment is marked.

An amazing result is that almost every fond parent will tell you proudly that his child is so large for his age that he takes a garment two sizes larger than the normal child. Some manufacturers have seriously contended that this is an advantage because it gives parents a gratified feeling they would not otherwise have, and stimulates sales.

### Lack of uniform size definitions.

Even more disturbing is the fact that the set of measurements used by one manufacturer for a garment of a certain bust measurement or age is not always the same as the set used by another. This situation can and is being corrected by the conferences being held under the auspices of the division of trade standards of the National Bureau of Standards.

The largest pattern companies and the manufacturers of some types of ready-to-wear garments have held meetings among themselves, and, under the procedure of the bureau, have agreed upon certain standard measurements and voluntarily pledged themselves to abide by them. The measurements adopted by such groups are obtained by inviting each member to submit those he has been using, and, by statistical analysis, determining the ones most commonly accepted or those most closely resembling each other. The neces-

sary compromises are then made by the groups sitting in at one or more conferences.

However, another and much more serious question is whether the sets of measurements finally agreed upon are in accord with the actual measurements of any considerable number of human beings. At each of the conferences held to date the very pertinent question of the origin of the measurements submitted has arisen. Usually it has been answered by each manufacturer stating that his were obtained "by measuring large numbers of people," "by measuring some average figure," or "by using forms made by one of the best form manufacturers in the country." In turn the form manufacturers report that they base the measurements of their forms on measurements of "average" figures.

The answers sound reasonable. The only trouble is that, in the meantime, women are complaining that they must alter most of the patterns they use and must spend time and money having clothing refitted at the stores, while retailers are lamenting the expense involved in the maintenance of huge alteration departments and the loss of good will and money in

returned goods and controversies over unsatisfactorily fitted garments.

### Origin of body measurements reviewed.

There undoubtedly have been interesting and little-suspected influences on the clothing sizes now in use. The subject of body proportions and measurements was in early times closely bound up with art, because it was there that the first practical need arose for such information. Many of the early sculptors and painters developed the idea that there was a fundamental law of body proportions which, if discovered, would hold for all figures.

As a result we have manuscripts dating from the remote civilization of India to almost the end of the nineteenth century in which artists have put forth systems of proportions based on imagined relationships between the measurements of different parts of the body. Many are called canons, one of the most famous being invented by the celebrated sculptor, Polycletus, who lived about B. C. 400.

An author writing in 1866 lists 49 "of the most modern systems of proportions."<sup>2</sup> In most of these

Miss Ruth O'Brien, in charge of the division of textiles and clothing, Bureau of Home Economics, Department of Agriculture, in this article ably presents her views on the logical basis for the standardization of garment sizes, which it is believed will not only prove of interest to the trade but to the women of the country as well, since they represent the consumers.

<sup>1</sup> Allison, A. F., Relief for Present Marketing Difficulties. *COMMERCIAL STANDARDS MONTHLY*, July, 1929.

<sup>2</sup> Story, W. W., *The Proportions of the Human Figure, According to a New Canon, for Practical Use; with a critical notice of the canon of Polycletus, and of the principal ancient and modern systems*, 63 pp. (illus.), London, Chapman & Hall, 1866.



canons or systems the writers have taken some part of the body as a unit for a basis of calculation and have tried to force a relation between it and every other part of the body. The foot, head, face, nose, and the vertical column are some of the parts taken as units by various investigators.

Another method consisted of complicated geometric schemes in which one dimension of the body was taken as a starting point and the others obtained by developing them through a maze of circles, triangles, and squares. The older literature reveals many of these attempts. Sometimes an imagined harmony of numbers was conceived. One writer contends there are seven constant dimensions from which the other proportions of the body can be derived, and asserts that all of the proportions of the human figure are to be obtained from the square of the number 7.

These fantastic ideas are only worthy of mention because to-day many of them come to light again and again in modern systems of drafting and discussions on body proportions. "Systems" of proportions are still the rule and not the exception.

### Studies made in secret.

Perhaps thorough scientific studies of the body measurements necessary for clothing have been made secretly and the results are being used by some companies. However, the difficulties being met by consumers, the utter lack of published data, and the fact that the entire science of human measurement has been so recently developed, make this very doubtful. A search of the literature reveals only one published investigation of this kind—that made by the War Department during the demobilization period of the World War, with the object of getting measurements for uniforms.<sup>3</sup>

It seems much more logical to assume that most of the measurements being used are the result of traditional ideas modified by individual experiences and such tables of measurements as are available.

However, with the exception of the War Department publications mentioned above, the only published tables that can be used are those compiled from measurements taken by physical directors in the college gymnasiums and in the Young Men's Christian Association, medical examiners connected with insurance companies, anthropometrists interested in growth or physical characteristics of different races, and officials of the Government military departments.

Most of such tables give only height and weight. Those that are more extensive report physical measurements that were made for a purpose entirely apart from clothing and were taken from body landmarks not used in clothing construction. Although many of these measurements were accurately made by trained anthropometrists, this fundamental difference makes them of little value to the clothing trade. It is also worthy of note that, with the exception of a relatively few studies made at women's colleges, there have been no investigations of women's measurements.

Some data now in use were no doubt obtained by the more or less casual measurements of a few individuals who were judged by the worker to be "average." To-day most clothing manufacturers seem naively unaware of the worthlessness of the figures obtained by clerks or tailors who pick up the nearest tape measure, guess at body landmarks, and apply the tape hurriedly over varying amounts of clothing.

In fact, an elaborate cooperative scheme for accumulating large numbers of figures in this unreliable fashion was started by a group of department stores a few years ago. The recognition by this group of the need of data and the desire to help was commendable, but the methods used will merely add more inaccurate figures to those already in existence. Very few in the clothing trade seem to know that anthropometry is a science, with definitely worked-out methods and instruments, which should be utilized in any study of this kind or that the science of statistics has long since brought us beyond the stage of merely striking averages.

### Government interested in studies.

The Bureau of Home Economics, Department of Agriculture, has been interested in the problem because of its economic importance not only to manufacturers and distributors, but to all home makers who must buy clothing, patterns, and yardage. A detailed study of the literature available and the present needs has been made, and a selected bibliography prepared of articles reporting body measurements, discussing garment and pattern sizing, and describing anthropometric methods. This furnishes a résumé of the information that can now be obtained on the subject and also provides a historical background which explains many present-day practices.

The bureau is convinced that the only way to remedy the situation is to conduct a nation-wide study of the body measurements of the different types of individuals represented in this country, under conditions which will insure that the best anthropometric procedure is used in taking the measurements, and that modern statistical methods are employed in analyzing the results.

Under the proper supervising agency this could be done readily through the nursery, primary and secondary schools, colleges, and extension groups already organized and interested in such problems.

The Department of Agriculture has direct contact with 664,000 children who are members of 4-H clubs, and 907,000 adults organized under the extension service. This, together with the fact that close cooperative relations exist between the department and the land-grant colleges as well as other educational organizations, makes it seem feasible for the bureau to carry through a program of this kind.

With this in mind, a tentative plan was outlined a few years ago and approved by a number of such institutions. However, to date, it has been impossible to gain the financial support necessary for the project. An investigation of this kind would require a great deal of careful scientific work, but the results would be accurate and would give a reliable foundation upon which size standardization could be based.

<sup>3</sup> Ireland, M. W., Davenport, C. B., and Love, A. G., *The Medical Department of the United States Army in the World War. Statistics*, pt. 1, *Army Anthropology, Based on Observations Made on Draft Recruits, 1917-18, and on Veterans at Demobilization, 1919.* 15, pt. 1, 635 pp. (illus.), Washington, D. C.; 1921.



## STANDARD OFFICE FORMS IMPROVE EFFICIENCY

**Medieval Merchants First to Use Negotiable Papers; Great Variety of Warehouse Forms, Invoices, and Bank Checks Reduced to One Standard Form for Each**

By S. F. TILLMAN

The foundation of our present-day practice of settling business transactions through the medium of negotiable paper, checks, drafts, and bills of exchange dates back nearly 1,000 years. The medieval merchants of Italy, France, Spain, and other European countries, were beset with the ruinous hazards in transporting money and the movement of their goods was hampered by the exactions of scores of petty States. These difficulties and uncertainties drove them to inaugurate those trade customs which found expression in the so-called "law merchant," and the establishment of their own courts for the settlement of disputes and for the adjustment of the commercial claims.

In those early days, these traders developed sufficient unity and organization to enforce their own practices and to secure substantial uniformity in application. Bills of exchange, letters of credit, and similar commercial documents came into general use. Although statisticians have given various estimates of the extent to which commercial transactions of today are settled through the medium of bankable paper, it does not seem unreasonable to assume that at least 95 per cent, by volume, of all business dealings are paid in that manner.

No estimate is available of the thousands of different sizes, shapes, and arrangements of the forms which have been devised for negotiable paper. These instruments vary all the way from an exceedingly small check, designed for dainty feminine use, to the bankable document that must be folded and unfolded several times whenever it is used.

Often the arrangement of information on these documents reflects personal preferences unsupported by essential requirements. Frequently the forms carry much ornamentation or advertising. Divergencies in arrangement and variations in size have added uncertainties, caused unnecessary clerical labor, also wasted time when preparing such paper for deposit, and further have substantially impeded its progress through the various banks.

### **Variety of invoices reduced.**

What has been said about great variety in commercial documents in general applies with particular force to invoices. It is not unusual for a large company to receive at least 1,000 invoices a day, of different sizes, wording, and arrangement. It is evident that this condition must cause waste of effort on the part of those who handle, check, audit, and file these invoices. The last 20 years has witnessed an amazing growth in the burden, on larger companies, of customers, invoices. One company, for example, had to maintain stocks of more than 500 special or customer invoice forms, and write all its invoices to each of these customers on his private or special form. The extra burden thrown on the vendor by this practice is obvious.

A few years ago several interested groups requested the division of simplified practice to call conferences of users of office forms, to consider and, if possible, adopt certain simplified forms for general use. These groups recognized that simplified forms, when made standard by general usage, engender good will by furthering cooperation and expediting business transactions. Likewise, by promoting efficiency and thus tending to put business undertakings on a more systematic basis, purely traditional and often wasteful practices are eliminated. Direct and indirect expenses are reduced and thereby substantial economies are gained.

In consequence certain commercial forms have been simplified under the auspices of the division of simplified practice. Warehouse forms have been reduced from hundreds of varieties to 15. This simplification, which became effective on September 24, 1924, was drafted and supported by the American Warehousemen's Association. The president of the association said at the time that "the use of these standard forms will eliminate misunderstandings and greatly improve the service of the warehouse business throughout the United States."

### **Standard bank checks.**

The simplified practice recommendation for bank checks, notes, drafts, and similar instruments, which became effective March 1, 1926, reduced an unknown number of varieties to one size for each instrument. Advertising matter, pictures, etc., are to be eliminated as far as possible from the face of checks and voucher checks. Where, however, it is felt necessary to show trade-marks, insignia, or other display, such design should appear in the upper left-hand corner of check and should not encroach upon space to be used for payee's name or other essential features.

In promulgating this recommendation, the American Bankers Association, American Institute of Architects, American Society of Certified Public Accountants, Association of Manufacturing Bank and Commercial Stationers, California Manufacturers Association, Lithographers Cooperative Association, National Association of Manufacturers, National Association of Purchasing Agents, Railway Accounting Officers Association, Railway Treasury Officers Association, and United Typothetæ of America, and many other well-known organizations played a prominent part.

The recommendation for commercial forms, including invoice, inquiry, and purchase-order forms, reduced thousands of varieties to three. This recommendation became effective April 1, 1925. The simplified invoice combining the best features of the national standard invoice as adopted in April, 1925, and the uniform invoice projected shortly thereafter was adopted February 17, 1927. Among the associations



which have accepted this recommendation are National Association of Purchasing Agents, Railway Accounting Officers Association, American Manufacturers Association, American Hardware Manufacturers Association, American Supply and Machinery Manufacturers Association, American Walnut Manufacturers Association, The Asphalt Association, Association of National Advertisers, Autographic Register Manufacturers Association, Continuous Fold Printers Association, Dairy Products Association of the Northwest, Linen Supply Association of America, National Association of Builders Exchange, National Association of Certified Public Accountants, National Association of Credit Men, National Association of Paint Distributors, National Association of Steel Furniture Manufacturers, National Paper Box Manufacturers Association, National Slate Association, Plywood Manufacturers Association, Press of the American Institute of Architects, Public Utilities Advertising Association, Rubber Association of America, Sales Book Manufacturers Association, Steel Barrel Manufacturers Association, United Roofing Contractors Association, United Metal Trades Association of the Pacific Coast.

#### **Success dependent upon cooperation.**

It is obvious that the standardization of office forms can only be effected through cooperation. The interchange of ideas and experience is the satisfactory method by which business can attain the best results. The formulating of a simplification program is only a step toward the goal. The simplified forms must be practicable and must be generally adopted if the advantages of simplification are to materialize.

### **NEW BUREAU PUBLICATION**

#### **Publication on Protection of Electrical Circuits and Equipment Against Lightning Issued**

The Bureau of Standards has issued as Miscellaneous Publication No. 95 a report dealing with the application of lightning arresters to electrical lines and equipment. The report has been drawn up by a committee of experts representing the various technical societies and others concerned with this subject.

The protection of power, railway, signaling, and communication circuits and apparatus is described. The bulk of the report deals with the application of lightning arresters to power and railway circuits, but other methods of protection, such as the use of overhead ground wires, are also discussed.

#### **Proper selection of arresters described.**

Not only direct strokes of lightning, but induced surges upon overhead conductors produce a great deal of trouble in the operation of the electrical utility service. This report points out how a proper selection and application of lightning arresters will greatly reduce such troubles and enable the utility companies to avoid frequent interruptions to their service from this cause.

The investigation of the properties of lightning is now being carried out by investigators more intensively than ever before, and it is expected that within

In general, the final draft of such a standard is not the product of an individual, but the composite of the best ideas and suggestions advanced. It must be borne in mind that any departure or variation, however slight, from the simplified form, as adopted, will be confusing to a large number of employees who have to handle the instrument, and will result in inconvenience and difficulties in many directions. Few individuals would care to assume the position of being able to improve upon the result of the considered opinion and experience of the large number of specialists who have helped to make the simplified bank check and the simplified invoice form the best for general use.

While any form promulgated for general use will, in certain cases, be susceptible of changes to meet individual views, nevertheless, in the interest of the "greatest good for the greatest number," it is necessary to sacrifice one's individual preferences. The simplified forms do not necessarily represent a fixed and unalterable practice. On the contrary they are subject to revision or reconsideration whenever the majority of users concerned find there is a manifest need for such action.

Standard forms ought not to be altered merely to meet some transient situation, but instead effort should be toward a thorough test of the applicability of the standards to individual cases.

The simplified business documents above referred to have been in use for some time and have proven their practicability and adaptability. A closer adherence to the standards will eliminate much of the waste now due to excessive diversification in sizes, shapes, and arrangement, and as such wastes are eliminated, clerical costs and office expenses will be still further reduced.

a short time our knowledge of the properties of lightning and of the methods of combating its effects will be greatly increased.

Copies of this publication may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at a cost of 25 cents per copy.

### **STANDARD LOCKS FOR SHIP DOORS**

A series of proposed standards comprising general specifications and outline drawings have been completed in preliminary form for submittal to the membership of the American Marine Standards Committee and others concerned, to ascertain whether or not the proposal to standardize locks meets with approval and to elicit critical comments and constructive suggestions for improvement of the proposed standard.

Fourteen standard locks are contemplated with standard and alternative accessories. The assortment is deemed sufficient to provide for all ordinary ship requirements. The purpose is to establish a minimum standard of quality deemed essential for reliable and lasting locks, to secure interchangeability of the locks and accessories of any one type in order to facilitate and minimize cost of replacement, and to establish a common basis for, and to simplify production, ready stocks, and purchasing.



## STANDARD PACKAGES

**A Convenience as Well as Economy and a Source of Revenue for Producers, Users, and Carriers; Purchasing Departments Play an Important Part in Developing Standardization Projects**

By RAY M. HUDSON, *Assistant Director, Bureau of Standards, for Commercial Standards*

Approximately 900 companies operate electric traction properties in the United States, including city, suburban, and interurban lines. Collectively they buy great quantities of materials, supplies, and equipment of widely diversified character. The list of their purchases ranges from tickets and office supplies to freight and passenger cars; from track spikes and tie-plates to generators, turbines, boilers; also the building materials for the structures which house them and the machinery for the shops that keep power plant and rolling stock in running order.

Coincident with the problem of purchasing to meet this great variety of wants are those of receiving, handling, and storing the goods bought, and, finally, issuing them to the various departments, divisions, or sections.

A majority of the materials of supply and maintenance come in some kind of a container; oil in drums, battery acid in carboys, nails or spikes in kegs, insulators in barrels or boxes, etc. In fact, nearly every variety of container finds its way into, and eventually out of, the storehouse.

This very diversity in size, dimension, style, and type imposes many problems. Special types of equipment may be necessary for handling. The problem of storing and piling for economy of floor space and convenience at inventory is ever present. Accessibility for easy issuance must be considered, and likewise thought must be given to their protection against depreciation or deterioration. Hazards arising in connection with storage of inflammables and against damage and injury also pass in review before the efficient and conscientious stores supervisor. He, perhaps, has more problems "to the square inch" than does any other official, certainly he has as many as any of them.

But these problems may be reduced, alleviated, simplified, through the simplification and standardization of containers. Much progress is being made in this direction by the stores department officials of the steam roads and by those of many of our larger industrial firms and corporations. To the alert stores superintendent and his purchasing agent a container is no longer just a container. A package is not just another package.

### **Fewer types desired by all.**

Attention to the shape, size, and type of container through cooperation of the stores superintendent, the purchasing agent, and the vendor is bringing about the development of fewer and better types—containers that do not involve excess packing and shipping costs—reduced weights that save money, be it ever so small an amount, in the cost of transporting from factory to user.

Containers that readily lend themselves to piling, stacking, and tiering economically; containers that are

literally stock bins until emptied, and then worth salvaging for reuse, or for sale for some other purpose—these are all indicative of the rapidly increasing recognition of the fundamental importance of the container as the solution to many current stores problems. Modification of present container types or sizes to meet the ultimate purposes of the buyer evidences the tendency to focus on this source of stores problems and to solve them at their source.

Simplification of containers, properly worked out between the man who uses the goods, the man who buys them, and the man who makes, sells, packs, and ships them is bringing many economies and greater convenience to all three.

From the carrier's side, this evolution in container design and construction, is helping to reduce loss and damage claims. Container simplification is enabling shippers more effectively to utilize car floor space, and stores superintendents more efficiently to use receiving depot or warehouse floor space. This simplification is leading to the further simplification of material-handling equipment, notably hand-lift trucks, skid platforms, etc.

Marked economy in loading time is the result, and with less time at the freight or warehouse platforms, cars are under way more quickly. Rolling stock either makes more trips or is moving with paying load more hours of the year. The road's revenues are enhanced by this reduction of "turn-around time," and this reduction has its origin in the simplification and standardization of containers.

### **Lower costs for containers.**

In so far as container or package standardization makes for lower cost to the buyer, it means appropriations or budgets for supplies and materials go further; and so far as it helps reduce worry or needless waste of time, it makes for higher efficiency and greater effectiveness among all who must handle the goods, whether labor in the track gang, electrician in the line repair crew, or mechanic in the car barns, not forgetting the personnel in the stock rooms.

The cry for lower costs of distribution is driving attention to the container problems in many fields. If retail merchants can secure cooperation in simplifying their container problems, then it would seem logical for the stores superintendents and purchasing agents to likewise receive similar cooperation from their vendors of the conveniences and economies of issuing to the using department four standard packages of 25 each, against the laborious counting, bagging, or otherwise preparing for delivery of 100 of the same item, whatever it may be.

Content units may vary—there may be 10 in one instance, 100 in another, or 500 in a third. That question is settled by the nature and character of the item, the frequency of its issue, or of its purchase, its value, etc.



The outstanding obstacles to greater progress toward package standardization are habit, custom, and mental inertia. There is too much reluctance to attempt anything different from the way it has always been done, and not enough serious thinking on whether or not the old way is the best way, the most economical, the simplest.

#### Standardization of trunks.

An outstanding example of the value of simplification in the packaging or container field is found in the project undertaken by the Central Association of German Trunk Manufacturers, in common with representatives of the Merchants and Consumers Association, to standardize trunks. It was decided to manufacture only 10 sizes of hand bags, 4 sizes of collapsible bags, 4 sizes of steamer trunks, and 3 sizes each of men's and women's trunks. The sizes are so graded that when shipping they may be placed one inside the other and thus expense of packing and transportation may be decreased.

In this country a simplification program for trunks and luggage is under consideration. It is expected

that the industry will complete such a project this month.

Manufacturers and users of skid platforms and lift trucks have agreed upon standard dimensions for two sizes of skid platforms, as well as adopting a standard terminology for skids and trucks, for use by all industries. This simplification program became effective on October 1, 1928.

The net of all this interest in container and package simplification and standardization is: (1) Reduced packing costs; (2) reduced handling expense, (3) lower costs for transportation per unit, (4) more effective utilization of car and warehouse space, (5) reduced expense for storekeeping and inventory taking, (6) greater convenience and less hazard in handling, (7) easier accounting and stores control, (8) fewer errors, (9) more efficient service of supply, (10) greater appreciation by everybody on the road of the helpfulness and value of the purchasing and stores departments, that through their regard for this container problem, and for practical package standardization, eases everybody's troubles.

If the other nine don't count, then benefit No. 10 alone is enough to warrant pushing this job across.

### PAPER COMMITTEE APPOINTED

**Membership of National Paper Standards Committee Approved; General Conference for Record and Printing Paper Standard Set for April 8, 1930**

In response to the action taken at the October 2, 1929, preliminary conference on the standardization of record and printing papers, the National Paper Standards Committee appointed by S. L. Willson, president of the American Paper and Pulp Association, was approved by the National Conference Committee at a meeting in New York on November 6.

The personnel of the committee is as follows: Blotting, H. W. Ellerson, of the Albemarle Paper Co., Richmond, Va.; bonds, ledgers, mimeo, manifold, and safety body stock, J. Frank McElwain, counselor to Manufacturers and Merchants, West Springfield, Mass.; Harrison Baldwin, sales manager, Hammermill Paper Co., Erie, Pa.; book, offset, George Olmstead, vice president, S. D. Warren Co., Cumberland Mills, Me.; John N. Bergstrom, president, Bergstrom Paper Co., Neenah, Wis.; bristols (index), Norman Harrower, Fitchburg, Mass., and Harold Nixon, secretary and sales manager, Chapin & Gould, Russell, Mass.; post card, coated blanks, C. S. Boyd, president, Appleton Coated Paper Co., Appleton, Wis., and Walter Randall, vice president, Champion Coated Paper Co., Hamilton, Ohio; cover, W. V. Williams, vice president and manager, Beckett Paper Co., Hamilton, Ohio; envelopes, R. I. Allison, sales manager, U. S. Envelope Co., Springfield, Mass.; chemists, Dr. Jessie E. Minor, Writing Paper Manufacturers, Springfield, Mass., Dr. George Richter or Dr. N. L. Nourse, The Brown Co., Berlin, N. H., Dr. Bjarne Johnsen, Hammermill Paper Co., Erie, Pa.

#### Industry sent letters regarding representation.

To secure a truly representative committee of the entire industry, letters were sent by the division of trade standards to the larger manufacturers who are

not represented in the American Paper and Pulp Association, asking if they desired representation on the National Standards Committee. One such request was received, and the company's representative was included on the committee.

The committee includes manufacturers of paper under the 13 classifications covered in the field of record and printing papers. The advice and opinions of other manufacturers in the various groups will be sought through the formation of subcommittees headed by the committee members of each group.

When tentative standards are formulated they will be correlated by the entire committee and after their approval by the manufacturers, will be submitted for open criticism and comment to all interests of the industry at a general conference which is tentatively arranged for April 8, 1930.

### PUBLICATIONS OF MARINE STANDARDS ANNOUNCED

The following pamphlets have recently been printed and distributed to the membership of the American Marine Standards Committee and others interested, according to the secretary of the committee:

AMSC60, Chocks for Ships, comprising nine standards of different types of plain and roller chocks. AMSC61, Marine Boilers and Pressure Vessels, rules for design and construction.

Copies of these publications are available at the nominal price of 10 cents each from the Superintendent of Documents, Government Printing Office, Washington, D. C. A list of this series of publications, now comprising Nos. 1 to 62, inclusive, and containing 102 standards promulgated by the American Marine Standards Committee, is available upon application to the Secretary, American Marine Standards Committee, Room 713, Department of Commerce, Washington, D. C.



## THE BANKERS' NEED FOR STANDARDS OF PAPER QUALITY

Purchasing Agent Discusses Banking Industry and Its Reaction to Standardization of Paper Quality; Bankers Feel Lack of Adequate Specifications; Standards Protect Values

By R. E. FLYNN, *Purchasing Agent, Union Trust Co., Detroit, Mich.*

It is unquestionably true that banks generally use far too many grades of paper. It is also true that there is often no apparent relation between the grades of paper employed and the respective uses for which they are intended. Colors are sometimes used without any regard for added costs and standard sizes are ignored by office managers and department heads, all of which cause extra worry to both buyers and printers.

In the effort of banking institutions to reduce overhead costs, particularly in service departments, which is one of the main reasons for bank consolidations, greater attention is being directed to the purchasing function, and buyers in turn are seeking every known means of increasing their knowledge of commodities so as to make intelligent selection possible.

It is believed that it is not unfair to state that the cooperation sought by buyers of paper and distributors has not proved particularly profitable to date to the former. Neither is to be blamed for this condition. Rather is it due to a lack of adequate and understandable specifications, by which the former can recommend certain grades of paper for definite uses and by which the buyer can intelligently purchase what the need demands. An example of this lack of cooperation can be found in the variations between binder and file sizes. For instance, the nearest size standard binder sheet to fit a bill file of 8 $\frac{3}{8}$  by 10 inches dimensions is 6 by 9 $\frac{1}{2}$  inches, a size that is quite unsuited for many purposes.

### Interests of bankers cited.

Briefly stated, banks are chiefly interested in the standardization of paper grades, sizes, and colors because this makes possible the securing of: (1) Better value for money expended, (2) better quality, (3) prompt deliveries, (4) lower inventory costs, (5) simplifies purchasing, (6) provides protection against unscrupulous paper merchants, and (7) makes match ups and reprints much easier.

While banks generally use nearly all of the so-called fine papers to some extent, their major needs are confined to: (1) Bonds (including typewriter papers), (2) bristols and index bristols, (3) envelopes, (4) ledgers (including manifold papers), and (5) safety body stock.

### Bond papers.

Under this classification we include chiefly letterheads and office forms. Nowhere does the axiom,

"The character of an institution is reflected by its letterheads," apply more strongly than in the case of banking houses. Therefore, the type of paper selected for this purpose should be of a grade that will create in the mind of the recipient a sense of strength and permanence. Fineness of texture and purity of color are also important factors in that they impart a sense of good judgment that is supposed to be the particular attribute of successful bankers.

Inasmuch as nearly all letterheads are folded and are subjected to severe usage in many cases, the grade of paper selected should bear a high folding-endurance test. It should be pointed out in this connection that nothing of which we know tends to destroy the impressions indicated above quite so much as by a letterhead which after folding a few times begins to crack and fray along the edges of the creases.

The question of finish on the stock is an important one. As the majority of letterheads used by banks are either engraved or lithographed, it is essential that a finish be secured that will best take steel or stone impressions. Little attention need be paid in this respect to the demand for paper that will take pen

The observations made by the author in this article are not to be construed as an official statement from the American Bankers Association or any other organization of American bankers. Rather are they the result of personal experiences in the purchase of paper for the writer's own institution, supplemented by the views of other bank buyers and officials with whom he has conferred.

and ink impressions, as nearly all letters are type-written to-day, but it is important that neat and lasting impressions be secured in the latter case. The same may be said of multigraphed letters, which are increasing in popularity.

The life of letterheads is a relatively short one and it is a curious anomaly that as conditions stand to-day in order to secure stock possessing the qualities outlined above, it is necessary to purchase paper that will last for many years. If a fine paper is developed that will meet all of these requirements it will mean a saving of many thousands of dollars each year to the banking interests of this country.

### Bonds and stock certificates.

Although neither bonds nor stock certificates are subjected, as a rule, to hard usage, they are often required to last a long time, and in these respects are just the opposite of letterheads, although there is a considerable variation in the case of bonds, where the maximum life could possibly be set at 30 years and the minimum at 5 years. Permanent stock certificates, on the other hand, may be required to last during the entire lifetime of the corporation. With the great wave of bank mergers that is sweeping the country, the demand for temporary stock certificates has arisen, the maximum life of which would probably be 5 years.



Probably no other contracts issued by banks is looked upon with quite the same degree of awe as these, and therefore extreme care is usually taken to secure stock that will exemplify ruggedness and high caste. As in the case of letterheads, the same characteristics that contribute these qualities make for extremely long life, far in excess of actual requirements in some instances. In view of the fact that the leading stock exchanges require such instruments to be produced on at least steel engraved borders (in some cases they demand that the entire certificate be engraved), it is important that a finish be secured that will properly take these impressions.

Some exchanges permit the body of such instruments to be printed, particularly when they are of a temporary nature, and it is important that this also be taken into account. The writer has yet to witness what might be termed a well printed bond or stock certificate, and the reason for the failure of printing houses to turn out high-grade jobs is undoubtedly due to an improper selection of the body stock to be used for these purposes.

### Office forms.

In view of the great variety of needs covered by this classification, they, perhaps, can best be studied by dividing them into three groups: (1) Temporary forms, (2) semipermanent forms, and (3) permanent forms.

Under temporary forms, we would class such types as those used for interoffice correspondence, work sheets, advices, and office memorandums, the maximum life of which would be five years.

Under semipermanent forms, we would include some legals, particularly those limited by statutory requirements and office record forms used as corollaries of these legals, the life of which would range between 5 and 15 years. Permanent forms would embrace those used for long-term agreements, such as land contracts, deeds, wills, reproductions of Government records, deposit slips, and copies of some letters.

The degree of handling varies in each case so this classification should provide grades as follows: (1) Those subject to excessive handling, (2) those subjected to moderate handling, and (3) those subject to slight handling. As folding constitutes unusual wear on paper, grades should be provided on the same schedule as that of handling.

The medium in which forms are used is likewise important. For instance, there are few grades of bond paper produced that are suitable for protracted use in binders. Tearing of post or ring holes and breaking off of corners from constant thumbing are the chief objections.

The finish is likewise important and should furnish a range that will provide for filling in with pen, pencil, or typewriter. As the majority of office forms in use to-day are partly printed and the remainder filled in by typewriter, a balance should be struck in the finishing process that will facilitate both operations without danger of smearing.

Summarizing this discussion of office forms, we believe the manufacturers of paper should set up definite specifications (taking life as the basis) for each group as outlined. For instance, permanent forms would bear separate gradings, according to handling, folding endurance, and medium of use and method of impression.

### Bristols.

Practically every bank uses large quantities of bristols, particularly index bristols. The uses to which they are put are fairly uniform and vary chiefly according to life. In this respect, they may be classified the same as office forms, namely, temporary, semipermanent, and permanent. The majority, undoubtedly, fall within the latter class and include signature cards, average balance cards, and accounting records.

Nearly all are subjected to excessive handling in and out of files and machines. The majority contain some printing and are posted, either by machine or pen and ink. Other requirements are that they be made from short to medium fibers to provide stiffness and good printing surfaces.

They should be capable of hard usage without splitting and should be hard sized to provide erasive and rewriting qualities, which may occur in the same spot on the sheet several times.

Curly or wavy bristol is exceptionally objectionable and it is therefore important that attention be given to the proper laying of the grain. To secure these results, it seems necessary to insist that they may be made on a Fourdrinier machine rather than on a cylinder machine. When made in this manner it will also be possible to secure minimum thickness consistent with strength which will reduce filing demands.

We believe it is possible to go further astray in the purchase of bristols than of any other kind of paper, due to the lack of proper specifications and knowledge of the subject.

### Envelopes.

There is a wide divergence of opinion in the matter of the use of envelopes, and we believe a tremendous waste occurs each year in banking institutions through

In his article the writer has not attempted to be at all technical, feeling that this lies entirely within the province of paper manufacturers. Rather, has he confined his attention to the presentation of uses made of each of the mentioned types of fine papers in the banks and trust companies in the United States, in the hope that with this outline as a guide, the manufacturers may draft such specifications as will make it possible for bank buyers generally to intelligently plan their purchases of this commodity.

To the buyer there seems little justification, states the author, for the comparative ease with which odd sizes, weights, grades, and colors may be secured with disastrous results to purchase budgets. In spite of the fact that it is generally recognized that there is no need for such departures, manufacturers continue to cater to individual whims, and the author is convinced that as long as this condition is allowed to prevail co-operation, which is so greatly desired between sellers and buyers, will not come to pass.



improper selection of grades of paper used in their manufacture.

Inasmuch as all correspondence envelopes have a purely temporary life, the chief requirements are good appearance and sufficient strength to withstand handling in the mails. A comparatively cheap grade of bond paper of the proper finish and color usually meet these requirements, but the chief difficulty is to secure a finish that will readily take glue and thus facilitate sticking of the flaps. Definite specifications for envelope paper of this class would be a decided contribution to industry.

Variations in the general rule may be found in the case of so-called coupon and outlook envelopes. The former are used chiefly for the storage of clipped coupons from bonds and are subject to much handling. A light weight paper is usually desired to facilitate filing in limited quarters, a requirement that is somewhat complicated by the fact that they are posted (usually in pen and ink) several times before their presentation to the paying agent. An outlook envelope is usually desirable for this purpose.

Outlook envelopes are also widely used for some correspondence purposes and must meet the same demands as those indicated above. One-piece envelopes apparently are more desirable than other types for this purpose. A printed design on the inner side helps to ensure privacy by rendering the envelope opaque.

The chief objection from bankers to a more extensive use of one-piece outlook envelopes for general correspondence purposes is found in the grades of paper used in their manufacture. If their weight, appearance, and color can be increased to correspond with that of a good grade of 24-pound bond, these objections would be largely overcome. Outlook envelopes are subject only to printing corner cards, so addressing requirements need no consideration.

### **Ledgers.**

For the most part, ledgers fall within that class of paper of which permanent life is demanded. The most important records of banking institutions are recorded on them, such as customers' accounts, daily profit and loss statements, general book entries and minute books of director's and stockholder's meetings. In the administration of estates and trusts, it is often necessary to produce in court accounts of long standing. It is therefore imperative that long-lived paper be selected for these purposes.

The majority of ledgers are also subjected to unusually hard usage, particularly from thumbing on the outer corners. Some are posted in ink, while others are posted in machines according to the system in vogue in the institution concerned, the latter operation usually being repeated with each sheet many times before being permanently filed. Although many business houses demand ledger sheets that will stand many erasures and rewrites, this practice is so contrary to good banking principles that it should not be considered as a requirement of financial institutions.

Ledger sheets while in active use may be kept either in binders, bound books, or trays. With the growing

popularity of loose-leaf systems, many are filed in binders, and the constant removal and replacement constitutes a heavy wear on post and slot holes. The use of ledger trays is also on the increase, and, although care is observed in cutting to follow the machine direction of fibres, sheets continue to crease and corners breakdown, which make posting by machine extremely difficult. The need for accurate registration with proof sheets and customer's copies, makes finish an important element in the case of ledgers, inasmuch as nearly all are machine ruled, partly printed and posted by one of the two methods indicated above.

### **Safety body stock.**

It will be noted that no attempt is made here to prescribe methods by which safety paper is to be treated by the use of sensitized tint blocks or other accepted means to prevent alterations. It is believed that inasmuch as the processes in use are the particular property of each manufacturer concerned, they are, therefore, not subject to examination or criticism at this time. None, so far as we know, have proved wholly invulnerable, and for this reason, it appears that the body stock presents the more important phase for study.

Briefly stated, safety paper is used chiefly for bank drafts and checks. These may be subdivided into those issued by the bank itself, which are generally termed cashier's checks and customer's checks. Both may be subjected to extremely hard usage, often passing through many hands before being returned to the bank of issue. Although the State of Michigan limits the useful life of checks to six years, it is open to question whether or not the bank's responsibility ends with providing safety stock for customer's checks possessing only that potential life. This will, of course, vary according to the statutes of each State.

### **Checks filed for reference.**

In view of the fact that the bank cashier's checks are filed away for permanent reference, there are many who will argue that the customer is entitled to the same consideration. That many banks share this opinion is shown by the fact that a large number of banks use the same grade of stock for both types of checks.

It is, perhaps, needless to state that those same impressions of virility and good taste should be conveyed by these messengers as in the case of letterheads, bonds, and stock certificates. To enhance this impression, the majority of bank checks are lithographed with the exception of the customer's name, which is imprinted on a special printing press.

Usually on cashier's checks, the payee's name is typed in, the amount stamped or cut in with a check writing machine and signed in pen and ink. Undoubtedly the majority of customer's checks are filled in by pen and ink, although many use a typewriter and there are always a few cases where a pencil is employed. In such cases, a sensitive tint has decided advantages.



## STANDARDS FOR CLERICAL WORK

### National Office Management Association and "System" Magazine to Collaborate in Working Out Ratios and Establishment of Standards for Clerical Work in Business Offices

The National Office Management Association and the *System* magazine, will collaborate in the working out of ratios and the establishment of standards for clerical work in general, as it is now conducted in business offices, W. H. Leffingwell has informed the Commercial Standards Monthly. Possibly no two organizations better equipped for this work could be found.

While ratios, measurements, and standards have been worked out for some other phases of business activity, and have proven invaluable to the merchant, the office has been completely overlooked in this respect.

It undoubtedly presents an extensive field for work of this kind. Ratios of space, for example, the amount of room that should be apportioned to executives, clerks, and office equipment have been lacking until now, a costly condition in large cities where rental space reaches very high figures. The investigation can also be turned upon office supplies, paper, pens, typewriter ribbons, forms, and stationery of all kinds. There is a vague estimate that this expense now runs from \$50 to \$250 annually per clerk employed, and between these sums there is a great gulf which this investigation should go far to close up.

#### Investigation should prove valuable.

In the matter of clerical minutes per order, a test of office efficiency where the order is the principal factor around which the business revolves, the findings of the investigation should prove of great value. Other work units, where the order is not the principal factor, will also be subjected to measurement and the various ratios connected therewith found. Data on typewriting output will also be sought, and the work of stenographers and dictating machine operators scrutinized for the same purpose.

Few office managers to-day know how many letters a typist should produce daily, or how many entries a bookkeeper should post in any specified time. Little of a definite character is known about these and similar matters, and the average office manager if questioned upon them could give nothing more than a haziest guesses. All of these and like matters pertaining to clerical office work will be thoroughly investigated, the information analyzed for various types of business, and ratios worked out for each.

#### "System" performed analogous service 15 years ago.

*System* is no tyro in this work, as some 15 years ago it performed an analogous service in establishing retail units, a work which has been of incalculable benefit to progressive retail merchants and which has been followed up by many chambers of commerce and business institutions throughout the land. On the other hand, the National Office Management Association is peculiarly well equipped in the possession of a large number of members who are specialists in work of this particular kind, and who, as they reside in many different parts of the country, are thus advantageously placed to take effective part in a widespread investigation.

A country-wide investigation will be made by means not only of questionnaires, but special studies by experts. The whole will be made available through the columns of *System*, and the Proceedings of the National Office Management Association.

If, as it is said, management is the first step in the placing of any subject upon a scientific plane, the value of this investigation to office management can hardly be overestimated. It will go further to do for the office manager what a previous similar investigation has done for the retail trader in the establishment of business ratios, the measurement and ultimate establishment of standards in office work.

## THE HOUSEHOLDER BUYER

### Writer in Ladies' Home Journal Explains Benefits to the Housewives Resulting from Work of the Bureau of Standards; Labeling Plan a Protection in Buying

In the November issue of the *Ladies' Home Journal* there is an article by Lita Bane, home economics editor of that publication, on "The Household Buyer," in which she reviews the work of the Bureau of Standards in aiding industry to develop simplifications, commercial standards, and the certification and labeling plan.

In her discussion of the value of these programs, she answers the question "How will the public benefit from this work?" by the following statement: "A customer bent on a shopping expedition steps into a store to purchase articles. The first thing she will

look for will be the label or standard. This label will bear an inscription somewhat as follows: 'guaranteed to comply with the standard of ---- specification No. ----.' This label will convey the message that the product attached to it is manufactured from proper materials, in an efficient manner, according to specifications. It will assure her that it has true values, because it is a standard merchandise."

In concluding her article, Miss Bane pointed out that inasmuch as the *Ladies' Home Journal* believes that "one of the modern homemaker's chief problems is the wise selection of household supplies and equipment, the magazine is cooperating with the Federal Government in collecting, sorting, and presenting for the use of its readers the standards and specifications that may better enable the household budget to yield the satisfaction and enjoyment sought by the family."



## LUMBER INDUSTRY SUMMARIZE RECOMMENDATIONS

### Certified Shipper's Certificates of Car Contents Added to Grade and Trade Marking and Guaranteeing of Individual Pieces; Part of the Hoover Standardization and Betterment of Trade Relations Program Begun Seven Years Ago

The National Lumber Manufacturers Association announced on November 5 that the program for improved lumber marketing practices in the interest of the general public, undertaken by organized lumber manufacturers in cooperation with President Hoover when he was Secretary of Commerce, has been brought to virtual completion, through the action of the West Coast Lumbermen's Association in undertaking to furnish buyers of carload lots of lumber with a sealed "Shipper's certificate of car contents," and the declaration of the Southern Pine Manufacturers Association that its mills will soon adopt the practice.

The "Shipper's certificate of car contents" is positive assurance to the buyer of the quantity as well as the quality of lumber contained in any shipment, and marks the accomplishment of one of President Hoover's notable efforts toward industrial standardization undertaken through conferences between business men and the Department of Commerce.

The "Shipper's certificate" of lumber quantity and classification was first adopted a year ago by the mills composing the Northern Hemlock and Hardwood Association, and more recently by the Western Pine Manufacturers Association. Its adoption by the West Coast Lumbermen's Association and the Southern Pine Association brings the idea into use in 75 per cent of America's largest lumber mills. The Hardwood Manufacturers Institute, Northern Pine Manufacturers Association, and California White and Sugar Pine Manufacturers Association are already committed to the idea, and the other lumber manufacturing groups are expected to follow suit. These associations are federated into the national association, which will hereafter make promotion of certified lumber shipments a leading feature of its national advertising.

The new certificate, used in slightly varying forms by the various regional lumber associations, provides for a detailed declaration on the part of the shipper of size, length, grade, species, working pieces, or bundles of lumber contained in each car. The certificate is then inclosed in a waterproof envelope and nailed to the inside of the car containing the shipment.

This statement on the certificate itself reveals its value: "This certificate is issued by the manufacturer to give you a record of size, grade, and tally of the stock contained in this car as it was loaded at his plant. The grades produced by the manufacturer are supervised and checked by experienced graders of the association under the official grading rules of the as-

sociation. If your invoice does not conform with this certificate, file your complaint with the seller within 10 days after receipt of the shipment and send a copy to the association."

The form of the certificate used by the individual manufacturer is issued by his association, thus emphasizing to the buyer that the grades produced are supervised by the association, and he is assured of full cooperation or assistance by the association in settling claims. The matter is thus taken out of a purely individual category.

#### Part of simplification program.

In addressing lumber manufacturers, distributors, architects, builders, engineers, and industrial consumers of lumber assembled for the first general lumber standards conference at the Department of Commerce in 1922, Secretary Hoover urged the establishment of more definite standards of quality and quantity to simplify lumber purchasing and reduce waste in manufacture, transportation, and utilization.

Subsequent collaboration between lumber manufacturers' associations and the distributors and users with officials of the Department of Commerce and the Forest Service resulted in the drafting of "American Lumber Standards," which have been accepted by the lumber manufacturers' association as the basis of lumber grades.

To assist lumber purchasers to benefit from standard lumber, the National Lumber Manufacturers Association is promoting among the manufacturers the practice of identifying their product by grade marks and trade-marks on the lumber itself. The grade marks identify the quality of each piece, while trade-mark, the "tree-mark," carrying with it a grade guarantee of each piece by the National Lumber Manufacturers Association, is the logical climax.

Manufacturers of 8,000,000,000 feet of lumber annually are now identifying through grade and trade-marks. The addition of the new "shipper's certificate" for lumber deliveries completes the security of the lumber buyer by guaranteeing the quantity of carload shipments, according to the different grades.

The adoption of the American Lumber Standards, the program of grade and trade-marking culminating in guaranteed "tree-mark" lumber, and now the use of the new shipper's certificate of car contents, singles out the lumber industry as one of the industrial groups that have gone the whole distance in simplifying, and building confidence in trade relations.

## STEEL OFFICE EQUIPMENT

Industry May Simplify Variety of Steel Office Equipment as Well as Defining Standard Shade of Olive Green for Office Furniture

A committee representing purchasers of steel office equipment throughout the country, is being organized for the purpose of determining the advisability of

simplifying the existing variety in over-all dimensions of this type of equipment, as well as a clarification of the use of the term "olive green," reports the division of simplified practice.

Under existing conditions there is considerable difficulty experienced by the purchaser of steel office furniture in matching his present equipment.



## STANDARDIZATION ACTIVITIES EXTENDED

### American Society for Testing Materials Organizes New Administrative Committee on Standards Which Is Expected to Expedite Submission of Standards for Acceptance

In conjunction with recent changes of standardization procedure, to make possible the more prompt submission of standards for acceptance as tentative, the American Society for Testing Materials announces that it has organized a new administrative committee on standards.

It appeared from a study of the matter from an administrative and organization point of view that the formation of a committee on standards was desirable in view of the magnitude and extent of the A. S. T. M. standardization work, of its growing importance to industries of the country and of the importance, and indeed in a way the urgency, of new relationships in standardization work that are coming rapidly to the front.

The new committee on standards will act in an advisory capacity in matters concerning the standardization work of the society, to promote this standardization work and to consider matters of general policy concerning the A. S. T. M. standardization activities, including the relationship of such activities with similar activities of other bodies. It will also review annually the progress of the society's standardization work and consider the desirability of extending that work from time to time into new fields, which might involve an extension of the activities of existing committees or the organization of new committees. Likewise, the committee will perform such functions as might be assigned to it in connection with a possible modification of the society's standardization procedure looking to the earlier promulgation of proposed standards as A. S. T. M. tentative standards. The reviewing of proposed new standards offered to the society between annual meetings will be an important function of this committee.

#### Standing committee part in developing standards.

The standing committees of the A. S. T. M. are now offered two alternative methods for the promulgation as tentative of proposed new standards and proposed amendments in existing tentative standards without any modification in either the prescribed procedure within a standing committee for the preparation and adoption of proposed standards, or amendments of standards, or in the prescribed procedure of the society in formally adopting A. S. T. M. standards. Thus, while standing committees may give advance notice of their intention to request that tentative standards be advanced to standard, or that revisions be made in existing standards, action in such matters can still be taken only by the society itself in annual meeting.

In reviewing between annual meetings proposed new standards or amendments of existing tentative standards offered by standing committees, the committee on standards is, in effect, performing the functions of a session of an A. S. T. M. annual meeting with perhaps the added advantage of opportunity for more careful scrutiny of procedure and consideration of the merits of any moot point; it represents, in effect, the interests of the society as a body in assuring itself of justification for publication as tentative of a proposed new standard.

It is believed that earlier bringing out of tentative standards where possible, will render greater service to all concerned and will develop more and better criticism and discussion of the new standard. The essential purposes in mind in expediting the standardization procedure of the society are fully met by furnishing this means for more quickly promulgating tentative standards.

### SAFETY CODE FOR PREVENTION OF DUST EXPLOSIONS

Revision of American Tentative Standard Has Been Submitted for Approval of the American Standards Association; Sponsored by National Fire Protection Association and United States Department of Agriculture

A revision of the American Tentative Standard "Safety Code for the Prevention of Dust Explosions in Pulverizing Systems for Sugar and Cocoa" has been submitted for the approval of the American Standards Association by the joint sponsors for this project, the National Fire Protection and the United States Department of Agriculture.

An introduction to the code says: "These regulations are issued to eliminate or reduce the hazards inherent in the manufacture of pulverized sugar and cocoa, particularly the hazard of their ignition and the propagation of a resulting fire," states an announcement from the headquarters of the American

Standards Association. "It is essential that there shall be no escape of dust into the atmosphere of the room, a condition favorable to dust explosion and to the rapid propagation of fire. For this reason it is important that the apparatus be provided with effective appliances to prevent ignition and confine fire; proper venting of the apparatus and ventilation of the pulverizing department are important.

The code covers the location of pulverizing systems, the construction of buildings, access to those buildings, power, lighting, preventive measures, housekeeping and fire protection.

The following codes covering the hazards of dust explosions in other fields have been approved by the American Standards Association: Installation of Pulverized Fuel Systems; Prevention of Dust Explosions in Starch Factories; Prevention of Dust Explosions in Flour and Feed Mills; and Prevention of Dust Explosions in Terminal Grain Elevators.



## COLOR FOR SCHOOL FURNITURE

Simplified Practice Recommendation Sent to Industry for Written Acceptance; To Become Effective on January 1, 1930

In accordance with the unanimous action of a general conference of producers, distributors, and users of school furniture held several months ago under the auspices of the division of simplified practice, the simplified practice recommendation (S. P. R. R111-30) "Color for School Furniture," has been submitted to the industry for signed acceptance.

The present program is the first of a series to be undertaken by the industry as a result of the initiative of the National School Supply Association. This association, recognizing the need for cooperative action of all concerned, requested the division of simplified practice early in 1929 to undertake the organization of several meetings of manufacturers of different lines of school furniture to discuss the problem, and to decide on some color from the many in use which would be satisfactory as the stock color for school seating, general school furniture, and laboratory furniture.

The recommendation, as approved by the general conference, applies to school seating (pupils' desks), teachers' desks, movable desks, recitation seats, chairs, tablet arm chairs, tables, typewriter tables, library furniture, filing cabinets, bookcases, kindergarten tables and chairs, and laboratory furniture. The color for stock varieties of school furniture shall be known as school furniture brown.

### Certification plan adopted.

In order to assure the purchaser that the commodity is in conformity with the recommendation, the conference propose that a label should be used indicating that duplicate color blocks are in accordance with the recommended color. The label to read as follows: "The color of this block conforms to simplified practice recommendation R111-30, U. S. Department of Commerce."

When the National School Supply Association first projected the recommendation for consideration, it was brought out that this industry has a real need for a uniform color for not only specific items covered by the recommendation, but for other equipment of wood and metal used in the schoolroom. No one manufacturer makes a complete line of equipment, and it is necessary for the consumer to select his equipment from several different lines produced. Since color harmony is desirable, the buyer can not get this result when all manufacturers use different color finishes. It is necessary, therefore, to match some sample selected by the consumer.

It was the belief of the conference that the program will reduce the demand for special finishes, simplify the stocking of school equipment, and result in smaller inventory; and that quicker and more satisfactory delivery will be possible. The conference in approving the proposed recommendation was guided to some extent by approval and indications of support in letters from individuals and organizations not represented at the conference. Some expressed the wish that the industry would undertake a similar program for other items of school equipment, such as lockers, metal work of desks, map cases, etc.

### Members of standing committee announced.

In accordance with the regular procedure of the division of simplified practice, the conference approved the appointment of a standing committee for the purpose of enlisting the active support of the various elements of the industry, and to maintain interest and adherence by keeping the program abreast of current practice, through periodic revisions. The personnel of the standing committee is as follows: J. W. McClinton (chairman), secretary, National School Supply Association; C. G. Campbell, Kewaunee Manufacturing Co.; W. O. Jones, Standard School Equipment Co.; C. A. Beems, Metropolitan Supply Co.; R. E. Wagner, Theodor Kundtz Co.; R. A. Fife, R. A. Fife Corporation; Carl Haas, Eau Claire Book & Stationery Co.; H. F. Herzog, purchasing agent, Northwestern University; H. W. Schmidt, department of public instruction, Madison, Wis.; and G. W. Styles, board of education, Detroit, Mich.

The recommendation was made effective from January 1, 1930, in order to provide sufficient time to circulate the industry for acceptance and to allow all concerned to arrange for production, distribution, and use under the terms of the program. This period will also be used by the National School Supply Association and the manufacturers' committee to prepare a supply of duplicate color blocks which will be made to match the master blocks approved by the conference, and which will be distributed by the association to all concerned when the recommendation becomes effective. Before the division of simplified practice will indorse and publish the project, however, it must receive the written acceptance of at least 80 per cent of the industry, by volume of annual production.

Copies of the mimeographed report of the conference, together with an acceptance blank, may be secured upon request, from the chief, division of simplified practice.

### AUSTRALIAN ASSOCIATIONS AMALGAMATE

With the establishment of the Standards Association of Australia, by amalgamation of the Australian Commonwealth Engineering Standards Association, and the Australian Commonwealth Association of Simplified Practice, there has been approved a coun-

cil, a considerable proportion of whose members have not hitherto been directly associated with standardization and simplification, as a national movement in Australia. The Standards Association of Australia has prepared a mimeographed bulletin giving the outline of the simplification and standardization movement in that country and the progress made to date.



## DIRECTORY AND ENCYCLOPEDIA OF SPECIFICATIONS

**Bureau Revising the National Directory of Commodity Specifications, Which Will Include All Available Specifications of National Scope and the Federal Specifications; It Is Also Preparing an Encyclopedia of Specifications to Supplement the Directory**

The division of specifications of the bureau has now in the course of preparation a revised edition of the National Directory of Commodity Specifications, the first edition of which was issued in 1925. In carrying forward this undertaking, a collection is being made of all available specifications which have been formulated or adopted by national technical societies and trade associations, and those of the Federal Specifications Board. The 1925 edition contains some 27,000 specifications covering more than 6,000 commodities giving in each case the name of the organization responsible for the preparation of the specifications, and the date.

In the revised edition there will be included not only the titles of the specifications and names of the issuing organizations but also outlines of the scopes of the specifications, telling in as few words as possible exactly what each specification contains with respect to composition and methods of tests.

To supplement the National Directory of Commodity Specifications, the division is also preparing an Encyclopedia of Specifications, one volume of which has been completed. The first volume in this series, covering standards and specifications in the wood-using industries, was published two years ago. The second volume will deal with standards and specifications for nonmetallic minerals and products made therefrom.

Specifications relating to ferrous and nonferrous materials will be dealt with in the third volume of the encyclopedia series which will be issued in two parts.

### **Preparation of encyclopedia big job.**

The preparation of the encyclopedia of specifications is a major piece of work, since an effort is made to include in full, or by means of adequate abstracts, tabulations, or cross references every available nationally recognized specification, standard of prac-

tice, or simplification project dealing with the materials covered in the National Directory of Commodity Specifications, as has already been done in the first volume relating to wood products and is being carried out in the second volume on nonmetallic minerals. To bring a volume of the encyclopedia of specifications into being three principal steps are involved.

The first step is in determining what material, from the mass available, should be used. In line with the procedure adopted for the entire encyclopedia series, it has been decided to include the standards and specifications of nationally recognized technical societies, trade associations, and similar organizations qualified to speak for industry, and units authorized to represent the Federal Government as a whole. Thus each volume becomes an utterance of industry and the National Government.

The second major step is in making a survey of the field thus prescribed to determine the extent of standardization and the nature and quantity of the material available. Each volume reflects the nature and extent of the work done in the chosen field, and directs attention to subjects awaiting development in standardization and simplification.

The third major step is in arranging the material for each volume in the most serviceable form for the readers.

For many of the commodities to be included there are several separate specifications. In each volume duplication is avoided by the use of an extensive reference system. It should be mentioned that, in using this system, no preference of the standards of one organization over those of another is intended, the idea being simply to avoid unnecessary duplication in the method of presentation.

To permit the reader to take advantage of later revision of the specifications which will be reprinted, each volume contains a list of the names and addresses of organizations whose standards and specifications appear therein.

## TRUNKS AND HAND LUGGAGE

**Conference Last Month Adopted Tentative Proposal for Simplification; Plan to Simplify Commodities Has Approval of Various Elements of Industry**

The joint simplified practice committee, representing the manufacturers and dealers of luggage, met last month at Chicago, in conjunction with the manufacturers' annual convention, to discuss the simplification of sizes of trunks and hand luggage, reports the division of simplified practice.

Representatives of the General Baggage Agents Association and others interested were also present at this preliminary conference, at which time the report of the manufacturers' committee on simplification and standardization was approved. It was decided that

the proposed schedule should be sent out by the division of simplified practice to all manufacturers for comment and approval.

A tentative recommendation is to be prepared, based on the report of the committee and comments recorded, for use as an agenda for a general conference of manufacturers, dealers, users, and others interested in the program for simplification of sizes. The movement for standardization and simplification not only has the indorsement of the Trunk, Luggage, and Leather Goods Manufacturers of America, and the National Luggage Dealers Association, but also the General Baggage Agents Association, the National Retail Dry Goods Association, the Pullman Co., and the National Association of Retail Clothiers and Furnishers.



## BULLETIN ON PROTECTION AGAINST LIGHTNING

"In case of a thunderstorm keep away from wire fences. Seek shelter in dense woods or a grove of trees."

Such is the advice contained in Miscellaneous Publication No. 92, of the Bureau of Standards, entitled "Code for Protection Against Lightning." The protection of persons and property against lightning is a subject of widespread interest and of considerable importance. Since the time of Benjamin Franklin, the value of lightning rods in the protection of buildings has been recognized, therefore a part of the code dealing with specifications for lightning rods used to protect buildings pertains to the subject of practical construction, and sets forth in detail the requirements of good design for such installations. These are of general application and particular types of buildings may need more specific consideration.

The price of this document, procurable through the Superintendent of Documents, Government Printing Office, Washington, D. C., is 25 cents per copy.

## MALLEABLE-IRON UNIONS

### Industry Adopts Commercial Standards for Malleable-Iron Unions Which Was Approved by Conference

Announcements have been issued to the industry by the division of trade standards of the success of the recommended commercial standard for standard weight malleable-iron or steel screwed unions, which was adopted at a general conference on September 24, 1928.

This standard covers the more important requirements for brass seated, ground joint, malleable-iron or steel screwed unions in what is known as standard weight, or the 250-pound class. It includes a tensile test for each size, minimum and maximum values for the more important dimensions, and requires that representative unions from each lot shall be subjected to not less than 20 pounds air pressure under oil or water as a regular part of the production process.

The standard is intended by the industry to form a nationally recognized basis for marketing standard weight malleable-iron unions as a means of preventing future retrogression of quality and retaining the confidence of the distributors and consumers in the general serviceability and value of this commodity.

## PROPOSED MARINE STANDARDS READY FOR FINAL ACTION

The result of the membership vote and criticisms and suggestions received by the secretary of the American Marine Standards Committee in connection therewith have been reported to the executive board of the committee on the following items.

Wire ropes for marine uses, proposed general specifications; sleeve couplings for propeller shafts, proposed alternative standards for solid and split couplings; mooring pipes, proposed dual standards for oval and circular pipes; metal berths for staterooms and staterooms, a series of proposed standards for berth frames and fittings; standard practice in hull construction, proposed standard general instructions cov-

ering the essential details of construction, inspection, and testing.

## PAMPHLET DESCRIBES BUREAU OF STANDARDS

"National Bureau of Standards—Its Functions and Activities," is the title of Circular No. 1 of the bureau, prepared by Henry D. Hubbard, assistant to the director. This basic circular endeavors to give to the nontechnical reader an outline of the services which the bureau renders, and in this the author has indeed succeeded. He has presented a most useful and interesting document for the citizens that wish to know more about their bureau.

In the preparation of this circular, the author has created what might be called an "observer-relator" style, or, in other words, in reading the pamphlet one receives the impression of conversing with the author rather than reading the printed words. For instance, in one chapter appears this passage:

"This is an unusual location for a Government bureau, far from the business section of the city," you remark. "It would be, for most Government offices, but not for a plant of this kind," your guide replies. "We had to get away from electrical and mechanical disturbances, which seriously interferes with precise measurements. The bureau deals with five classes of standards," he continues, "standards of measurement, standard numerical constants, standards of performance, standards of quality, and standards of practice. In this vault on the first floor of this building are kept the fundamental standards of measurement, the meter and kilogram."

Really this is a pamphlet that every citizen should be a proud owner of, especially the student of our Government. To secure it, one merely addresses the Superintendent of Documents, Government Printing Office, Washington, D. C., sending that official 50 cents, and the document in question will be forwarded without delay.

## GLASS JOINTS

### Meeting to Consider Proposed Commercial Standard for Interchangeable Glass Joints for Laboratory Glassware

The users of laboratory glassware will undoubtedly welcome the efforts of manufacturers to adopt a standard taper and a set of standard diameters for interchangeable ground-glass joints.

The use of such joints will greatly facilitate the setting up of complicated pieces of laboratory apparatus and will result in enormous savings in the event of breakage, since it will be readily possible to quickly substitute the part broken without discarding the entire piece of apparatus.

A proposed standard was agreed upon by manufacturers with the cooperation of the Bureau of Standards at a meeting held on October 29. The proposed commercial standard will be considered by all those interested at a general conference to be held at the bureau this month. Invitations have been sent to a large list of laboratories and to the manufacturers and distributors of laboratory glassware. Others interested will be supplied, upon request, with a copy of the proposed standard.



## FOUNDRY PATTERNS OF WOOD

### Recommended Commercial Standard for Foundry Patterns of Wood Distributed for Written Acceptance

Agreeable to a request from the fifth annual conference of the California Development Association, held at Del Monte, Calif., January 24, 1929, and with the full approval of the American Foundrymen's Association, a recommended commercial standard for foundry patterns of wood has been distributed for written acceptance.

The standard covers a system of color marking and identification for all foundry patterns and core boxes of wood construction in accordance with a scheme previously adopted by the American Foundrymen's Association and a number of cooperating organizations. Many letters commending this standard and its general adoption, have been received by the division of trade standards.

An unusually large number of acceptances have been filed by producers, distributors, and users of foundry patterns so far, and there is every reason to believe that the acceptance of the project may be announced within a short time.

## TRACTOR FIFTH WHEELS AND PINTLES

### Committee of the Society of Automotive Engineers to Study Trailer-Coupler Standardization Program Authorized at Atlantic City Convention

One of the subjects that has been considered recurrently for standardization by the Society of Automotive Engineers, according to the S. A. E. Journal for November, is the interchangeability of tractor-trailer fifth wheels and the pintle coupling for 4-wheel trailers. Commercial conditions for several years, reports the Journal, have apparently precluded real fifth-wheel standardization, but shortly after the World War the society adopted a standard for pintle hooks that followed closely the standard then established by the Motor Transport Corps of the Army. This pintle subsequently became obsolete and the standard adopted by the society was recently canceled.

The necessity for standardization of the tractor fifth-wheel connection has again been discussed by the transportation committee of the society, as this type of equipment is an important factor in freight handling by motor vehicles at large terminals.

A meeting of the members of the transportation committee and the motor-truck division of the standards committee was held early in October during the American Electric Railway Association convention at Atlantic City, at which representatives of the truck and the trailer manufacturers were cordially invited to take part. In discussing the subject at the meeting, the difficulties of the contract haulers were outlined and the opinion was expressed by almost all those concerned with such a program that standardization to some extent should be established.

One suggestion offered was that the manufacturers of trucks and trailers develop a coupling design, which could be termed a standard, that would correspond to the fifth-wheel connections used before the commercial introduction of the semiautomatic and the fully automatic types, leaving each trailer manufacturer free to continue the use of his particular type of fifth-wheel connection in cases where his business might make it desirable for him to do so.

## Trailer men to cooperate.

The meeting indicated a general desire for cooperation in this direction and expressed the opinion that something should be done soon toward standardization although it may take several years actually to put such a standard into commercial practice. It was felt that the pintle-connection problem is much simpler and can be handled by the same group that considers the fifth-wheel connections. Agreement was reached that a committee of the motor-truck division of the standards committee be appointed to take up this work promptly.

## Committee established.

Charles S. Lyon, of the Motor Haulage Co. (Inc.), agreed to serve as chairman of the committee, the other members to be designated later by him in conference with the chairman of the transportation committee and the motor-truck division. The representatives of the trailer companies who were present indicated their desire to cooperate fully in organizing the work of the committee.

## UNIFORMITY OF FIRE-HOSE THREADS APPROVED

### Nineteen Towns in Texas Adopt Standard Fire-Hose Threads

Progress is being made in standardizing fire-hose threads in cities and towns of Texas, according to an announcement made by J. W. De Weese, fire insurance commissioner of that State, which appeared in a recent issue of the United States Daily. This statement said that 19 communities in the State, including San Antonio, have been checked or standardized and the standardization work will be completed in Houston, the last large city, by January 1, 1930.

This work is part of a movement in which the entire State will adopt the national standard fire-hose thread. This thread is sponsored by the American Standards Association, National Screw Threads Commission, American Society of Mechanical Engineers, National Board of Fire Underwriters, and other Organizations.

"We are now advised," said the fire insurance commissioner in his statement, "by the waterworks commissioner of the city of Houston that the work of standardization will be completed there on or before January 1, 1930. This completes the last of our larger cities and the cooperation shown by interested officials is deeply appreciated by this office."

## BUILDING EXITS CODE

### The 1929 Edition of Code Has Been Approved by American Standards Association as American Tentative Standard; Sponsored by National Fire Protection Association

The 1929 edition of the Building Exits Code has been approved as an American Tentative Standard by the American Standards Association, and published by the National Fire Protection Association, the sponsor for this project. The code is a revision of the 1927 edition, embodying a new section on places of public assembly and additions to the section on schools.

Safe exit provisions are made for schools, hospitals, department stores, factories, and places of public assembly. The provisions of the code cover stairways,



fire escapes, elevator and escalator platforms, doorways, and practically every other factor of construction entering into the safe exit from buildings in case of fire. In classifying the different types of buildings, distinction is made between low-hazard, moderate-hazard, and high-hazard buildings. Hospitals, schools, and office buildings are included in the low-hazard section; department stores, and such industrial plants as bakeries, boots and shoes, and woolen clothing are considered to present a moderate hazard; dry-cleaning establishments, cotton-clothing plants, and most chemical plants are classified as high-hazard buildings.

Considerable attention is also devoted to fire drills. "Fire is always unexpected," says the code. "Drills should be so arranged that they will ensure orderly exit under the unusual conditions obtaining in case of fire. For this reason drills should be habitually held in unexpected ways, and at the same time it loses much of its value, and when for some reason in actual fire it is not possible to follow the usual routine of the fire exit drill to which occupants have become accustomed, confusion and panic may ensue.

"Drills should be carefully planned to simulate actual fire conditions. Not only should they be held at varying times, but should use different means of exit, assumption being made, for example, that some given stairway is unavailable by reason of fire or smoke, all the occupants being led out by some other route. Fire exit drills should be designed to familiarize the occupants with all available means of exits, particularly outside stairs and other emergency exits that are not habitually used during the normal occupancy of the building.

"In buildings where the population is of a changing character and not under discipline; for example, in hotels, or in department stores, no regularly organized fire exit drill, such as that which may be conducted in schools, is possible. In such cases the fire exit drills must be limited to the regular employees who, however, can be thoroughly schooled in the proper procedure and can be trained to properly direct other occupants of the building in case of fire."

### TRADE ASSOCIATIONS PARTICIPATE IN INDUSTRIAL STANDARDIZATION

Secretary of American Standards Association Tells American Gear Manufacturers Association of the Interrelationship of Company, Association, and National Standardization

The interrelationships of company, association, and national standardization were discussed recently by Dr. P. G. Agnew, secretary of the American Standards Association, in an address before the American Gear Manufacturers Association, at which time he pointed out that "the strength of the trade association in the standardization movement depends fundamentally upon two facts. First, standardization is essentially a managerial problem. It is just as much a problem of management to decide whether paint shall be marketed in accordance with specification A or specification B, as it is to decide whether a company shall engage in the paint business or in the grocery business. Second, the trade association is the only means which has yet been found of systematic cooperation between the management of the various units in an industry."

In outlining the functions of companies, and trade associations in standardization work, he said that "standardization work should be specifically provided for and systematically organized, each department concerned taking an active part. The company should cooperate actively in standardization work of the trade association, and through it, in the development of national standards. Conversely, the set up should be such as to permit an immediate start in the introduction of each new national or trade association standard which concerns the work of the company.

"All this should be equally true of big firms and of little firms, of manufacturers, of distributors, and of operating companies. In the same general sense it should be true of city, State, and Federal Governments. The association should have effective machinery for promptly getting a real consensus of all of its members concerned with a particular subject. One of the association's educational functions should be to bring home to the executives of its member companies the economic importance of standardization and its significance as a managerial tool.

"In consultation with other groups, and with the national body, it should decide what part of its standardization work is to be handled purely as an association matter on account of its scope and influence being limited to one narrow field without reflexes upon other industries and what part needs cooperation with other groups, from the point of view of national standardization through the national body. It should require responsible representation on the part of its members, on its committees dealing with standards. The association should systematically promote the use by its own members and by industry generally, both of its own standards and of those national standards in whose formulation it has taken part."

### TO REVIEW SIMPLIFIED PRACTICE RECOMMENDATION

Manufacturers of One-Piece Porcelain Insulators Contacted for Data on Simplification Schedule for This Commodity

In order to provide the standing committee in charge of Simplified Practice Recommendation No. 73, One-Piece Porcelain Insulators, with the necessary data upon which to base action when the committee reviews the recommendation, the division of simplified practice has addressed an inquiry to all manufacturers of this commodity, requesting certain specified information.

The information sought is in answer to the following question: "Considering only that part of your business to which Simplified Practice Recommendation No. 73 is applicable, what percentage of your 1928 production conformed to the stock varieties in the recommendation? List the nonstock varieties, if any, for which there exists a sufficient demand to warrant including them in the recommendation. If consumer demand indicates that further eliminations in the present recommendation can be made, list below the items which are nonessential. Is there any price differential favoring the simplified line as against nonsimplified items? Have you experienced any benefit from the simplified program?"



## SIMPLIFICATIONS REAFFIRMED

**Simplified Practice Recommendations for Sheet Steel, Eaves Trough and Conductor Pipe, Roofing Ternes, and Metallic Cartridges Reaffirmed**

The following Simplified Practice Recommendations No. 28, Sheet Steel; No. 29, Eaves Trough and Conductor Pipe; No. 30, Roofing Ternes; and No. 62, Metallic Cartridges, have been reaffirmed without change by their respective standing committees, for another year.

The simplified practice recommendation on sheet steel effected a reduction in variety of stock sizes from 1,819 to 261, an elimination in variety of 85 per cent. The eaves-trough and conductor-pipe recommendation was instrumental in reducing varieties from 21 to 16, or 24 per cent elimination. Due to the recommendation on roofing ternes, weights and thicknesses of this commodity were reduced from 9 to 7, or an elimination of 22 per cent, while the program for metallic cartridges reduced the number of varieties from 348 to 256, or 26 per cent.

Surveys of production, conducted prior to holding the revision meetings for roofing terne and metallic cartridge programs, indicated the degree of adherence to these recommendations to be almost 100 per cent.

## PAMPHLETS ON SIMPLIFIED PRACTICE RECOMMENDATIONS AVAILABLE

**Recently Approved Printed Booklets on Simplified Practice Recommendations for Composition Blackboard, Floor Sweeps, and Welded Chains Now Available**

The division of simplified practice announces the availability of three additional printed simplified practice recommendations. They are as follows: SPR75 (revised), Composition Blackboard; SPR88, Floor Sweeps; and SPR100, Welded Chain.

These booklets, which are included in the "Elimination of Waste Series" of the Department of Commerce, may be procured from the Superintendent of Documents, Government Printing Office, Washington, D. C. The price per copy is 5 cents, excepting that for Composition Blackboard, which is 10 cents.

## STANDARD FOR PLAIN MOHAIR PLUSH APPROVED

**General Conference Gives Approval to Project; Additional Specifications to Be Considered Later**

A general conference of mohair plush manufacturers, upholstered furniture manufacturers, furniture dealers, and general interests held at the Bureau of Standards on November 8, 1929, adopted a specification for the minimum grade of plain mohair upholstery plush. The specification requires that weight of pile shall be not less than 0.70 pound of pure mohair, exclusive of sizing, per linear yard of 54-inch fabric and exclusive of selvages; that the number of pile tufts shall be not less than 250 per square inch, a tuft being the two ends of a pile loop; that the color of the pile shall show no objectionable discoloration or fading when exposed to a carbon arc lamp, such as the Fade-Ometer or its equivalent for a period of 20 hours; and that the fabric shall be treated by thorough immersion in a moth-repellent solution.

A committee of manufacturers was appointed to draft a specification for one or more higher grades, and following approval by the National Upholstery Textile Association (Inc.), to submit such draft to a second general conference. It is expected that the minimum grade will be made effective coincidentally with the higher grade or grades at some time to be decided on later.

## REVISED SCHEDULE FOR FORGED TOOLS ACCEPTED

**Revised Recommendation for Forged Tools, Which Has Been Before Industry for Written Acceptance, Is Now Effective**

The division of simplified practice announces that revised Simplified Practice Recommendation No. 17, Forged Tools, will be considered as effective from July 1, 1929. Signed acceptances from a number of manufacturers, distributors, and users of forged tools, sufficient to insure the general adoption of the revised simplification program have been received.

This simplified practice recommendation reduces the number of weights, sizes, and types of forged tools from 665 to 369, or an elimination in variety of 44 per cent. Forged tool eye sizes were also reduced in variety from 120 to 10, an elimination of 91 per cent in varieties produced.

## DOMESTIC AND INDUSTRIAL FUEL OILS

The commercial standard grades of domestic and industrial fuel oils which became effective July 15, 1929, are receiving very enthusiastic support by all branches of the industry, according to the division of trade standards.

Inquiries for the specifications are being received by the division daily from refiners, fuel-oil distributors, and consumers throughout the country. The commercial standard is now being printed as an official publication of the Bureau of Standards and will be available for distribution in the near future.

## HICKORY GOLF SHAFTS

**Industry Accepts Commercial Standard for Hickory Golf Shafts; Now in Effect**

On November 1 announcement was made of the successful establishment of a commercial standard for hickory golf shafts, which became effective immediately. The standard applies to semifinished shafts, known in the trade as "B" form shafts for iron-headed clubs, and covers dimensions, general quality requirements, and provides four grades based on a mechanical test for stiffness.

The stiffness test is made by flexing a shaft a given distance over a fulcrum placed on the platform of a self-indicating scale. The load read on the scale is a measure of the stiffness of the shaft. Heretofore the testing of hickory golf shafts was done by hand, and no two inspectors could ever be brought into exact agreement on any lot of shafts. Many misunderstandings occurred, which resulted in return of goods with the consequent loss of time and shipping expense, and frequently involved litigation.

The commercial standard, as approved by the industry, should eliminate this misunderstanding.



## PAMPHLET ON YARNS RELEASED

Booklet on Commercial Standard for Regain of Mercerized Cotton Yarns Now Available

The printed pamphlet entitled "Regain of Mercerized Cotton Yarns, Commercial Standards CS11-29," has been released for distribution. It sets forth definitions and values for moisture contents and regain of mercerized cotton yarns as adopted and accepted by the industry, according to the division of trade standards.

Included is a brief history of the project, a report of the general conference and a list of the standing committee appointed to recommend revisions. This pamphlet points out that mercerized yarns having a regain below  $7\frac{1}{2}$  or above  $9\frac{1}{2}$  per cent shall be adjusted by the seller or buyer, as the case may be, on the regain basis of  $8\frac{1}{2}$  per cent (7.83 per cent moisture content.) Mercerized yarns with a regain between  $7\frac{1}{2}$  and  $9\frac{1}{2}$  per cent shall not call for adjustment between buyer and seller.

## FOLDING BOXES FOR COFFEE

Industry Said to Be Desirous of Effecting Simplification of Sizes of Folding Boxes for Coffee

A proposal by the industry to simplify the sizes of folding boxes for coffee received favorable consideration at the annual meeting of the National Coffee Roasters Association, which was held last month at New Orleans. At the request of the Paperboard Industries Association and the National Coffee Roasters Association, the division of simplified practice will collaborate with those groups in conducting a preliminary survey for a consensus of opinion regarding the need for simplification of package sizes.

A summary of the survey will be submitted to a general conference of interested elements of the industry for consideration. It is the expression of the industry that the adoption of the proposed simplified list of sizes, dimensions, etc., for folding boxes for coffee will result, not only in the elimination of waste but in a reduction of costs all along the line. Increased convenience in handling, shipping and storing is another expected benefit.

## ICE-CREAM BRICK MOLDS AND CARTONS

General Conference Scheduled for This Month, at Which Time Proposed Simplification Will Be Considered

In accordance with a request received from the simplified practice committee of the International Association of Ice Cream Manufacturers, a general conference of all interests has been arranged for the month of December, announces the division of simplified practice.

It is expected that representatives of manufacturers of the following will attend: Ice cream, ice-cream molds, cartons, carton filling machinery, and ice-cream cabinets. Weights and measures officials and others interested have also been invited to attend.

The conference, which will be held under the auspices of the division, will convene in Washington. The purpose of the conference will be to approve a proposed simplified list of sizes for ice-cream brick molds and ice-cream cartons. The agenda for this conference is based on the report of the committee,

which were approved by the recent convention of the International Association of Ice Cream Manufacturers.

## CLOSER CONTACT OF GOVERNMENT AGENCIES SAVES MILLIONS

Property Transfer Eliminates Wastage, Says Chief Coordinator; Program Formulated by Brigadier General Smither

Details of how the Chief Coordinator's Office, working under direction of the Bureau of the Budget, accomplished savings aggregating millions of dollars during the fiscal year ended June 30, 1929, is told in the annual report of the Chief Coordinator, Rear Admiral H. H. Rousseau, U. S. Navy, to the Director of the Bureau of the Budget.

Admiral Rousseau's review of the activities of his office during the 12-month period shows how wastage and leaks of Government money gradually were being stopped through closer contact between all Federal agencies and how surplus property, listed for discard or stored idly, had been transferred or sold with the result either that much less new equipment was purchased or funds were turned back to the Treasury Department. Only the Marine Corps and the Panama Canal Commission, of all of the Government agencies, no longer figure in the Chief Coordinator's program as sources of surplus property which can be liquidated or transferred to other groups.

The report explains that the main outlines of the year's work had been initiated by Brig. Gen. Henry C. Smither, U. S. Army, who resigned as Chief Coordinator and retired from active service on January 1, 1929. His programs were formulated, the report states, in a fashion that it was necessary only to carry on the activities provided for, to assure accomplishment of savings in Government expenses.

## SOFT FIBER (JUTE) TWINE

Simplified Practice Recommendation No. 110, Soft Fiber (Jute) Twine, has been accepted by producers representing more than 80 per cent of the total annual output, as well as a satisfactory number of distributors and users. An announcement has been sent to the industry that the program will be in effect as of November 1, 1929, the date established by the general conference, which was held on June 25, when the program was considered.

## AMMETERS AND OIL GAGES

A manufacturer of ammeters and oil gages has suggested that there is need for simplification of sizes and varieties of the kinds used on automobiles. The current demand is for an unnecessarily large number of varieties which is a hardship to the manufacturers. A simplified line would, in the opinion of this manufacturer, satisfy normal requirements, and result in benefit to all concerned.

The division of simplified practice receives many suggestions for simplification. Manufacturers, distributors and users of these commodities are invited to submit any comments which will be helpful in determining the interested industry's attitude toward these suggestions.



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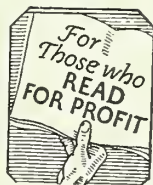
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—President Hoover, at the laying of the corner stone of the new building of the U. S. Department of Commerce, June 10, 1929.



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